David Vernon

Curriculum Vitae

david@vernon.eu
www.vernon.eu

Last Updated: 22 February 2024

Biographical Sketch

I graduated from the University of Dublin, Trinity College, in 1979 with a degree in engineering (B.A., B.A.I.). I completed my Ph.D. in 1985 and was elected a Fellow of Trinity College in 1991.

I am a research professor at Carnegie Mellon University Africa, located in Rwanda, where I'm helping to grow the robotics program, embracing teaching, research, and outreach to other universities in Africa.

I began my professional career in 1979 as a software engineer with Westinghouse Electric where I worked in the USA and Ireland until 1981 when I embarked on a Ph.D at Trinity College Dublin.

In 1983, I was appointed a Lecturer in the Department of Computer Science in Trinity College Dublin. From 1991 to 1993, I took a leave of absence to work as a Project Officer in the European Commission in the areas of high performance computing and software engineering.

In 1995, I was appointed to the Chair of Computer Science at the National University of Ireland, Maynooth, Ireland as Professor and Head of Department. I was responsible for the development and launch of new B.Sc. and M.Sc. degrees in computer science and software engineering. I left Maynooth in 1999.

From 1998 to 2005 I worked at Etisalat University College, UAE (later to become Khalifa University), as Professor of Computer Engineering, Head of Department, and Director of Postgraduate Studies (Acting).

In 2002, I spent a year at Science Foundation Ireland (SFI) as a Senior Programme Officer, with responsibility in the areas of computer science and software engineering.

From 2002 to 2005, I coordinated ECVision – the European Research Network for Cognitive Computer Vision Systems. From 2006 to 2008 I coordinated euCognition – the European Network for the Advancement of Artificial Cognitive Systems (www.eucognition.org). From 2004 to 2010, I was the technical coordinator of the EU-funded RobotCub project (www.robotcub.org) that developed the iCub humanoid robot.

I was a visiting professor at the University of Genova in 2005 and 2006. In late 2006, I returned to the UAE as Professor of Computer Engineering at Khalifa University of Science, Technology, and Research with the specific brief to develop their post-graduate degree programs. In 2011, I joined the Institute for Cognitive Systems at the Technical University of Munich as a senior researcher.

I was appointed Professor of Informatics at the University of Skövde, Sweden, in March 2013. The same year I joined the Advisory Board of Innopolis University in Russia where I was also a visiting professor.

In January 2017, I joined Carnegie Mellon University Africa in Rwanda as a Teaching Professor and in May 2020, I returned to Europe to pursue research in cognitive robotics.

I joined the research team at Institute for Artificial Intelligence, University of Bremen in August 2020, working on cognitive robots that can carry out everyday activities. I am responsible for the implementation of the situation model framework in the CRAM cognitive architecture.

In October 2021, I returned to Carnegie Mellon University Africa as a Visiting Professor to help grow the robotics program, embracing teaching, research, and outreach to other universities in Africa.

Over the past forty-two years, I have authored four books, edited another five, and published more than 140 papers.

I have held editorial positions of several journals. At present, I am an associate editor of Cognitive Systems Research. I am also a series editor of the Springer book series *Cognitive Systems Monographs*.

In June 2000, I organized the 6th European Conference on Computer Vision (ECCV 2000) in Trinity College Dublin and I served as both General Chair and Program Chair. I am a member of the Board of ECCV.

I am a founding co-chair of the IEEE Robotics and Automation Society Technical Committee for Cognitive Robotics (www.ieee-coro.org).

I am a Chartered Engineer and Fellow of the Institution of Engineers of Ireland (Engineers Ireland), a Life Senior Member of the IEEE, and Research Fellow at the Kigali Collaborative Research Centre, Rwanda.

Table of Contents

Personal Information

Name:	David Vernon
Date of Birth:	8th March 1958
Marital Status:	Married, with two adult daughters
Home Address:	No. 11, KG676 Street, Kigali, Rwanda.
Email Address:	david@vernon.eu
Website :	www.vernon.eu

Qualifications

Academic Qualifications

B.A., B.A.I.	University of Dublin, Trinity College, Ireland.	(1979)
Ph.D.	University of Dublin, Trinity College, Ireland.	(1985)
M.A.	University of Dublin, Trinity College, Ireland.	(1986)

Professional Qualifications

Life Senior Member of the Institute of Electrical and Electronic Engineers (IEEE)
Chartered Engineer, FIEI: Fellow of Engineers Ireland (Institution of Engineers of Ireland).

Honours

- Selected by the IEEE Robotics and Automation Society (RAS) to create a course on cognitive robotics under the CEMRA program (2019).
- Fellow of the German ZiF research group "Enabling Cognitive Behavior of Humans, Animals, and Machines: Situation model Perspectives" (2019 – 2020).
- Research Fellow, Kigali Collaborative Research Centre (2017 –).
- Recipient (with three other co-chairs) of the 2017 Most Active Technical Committee Award from the IEEE Robotics and Automation Society (RAS).
- Co-Chair and Founding Member of the IEEE-RAS TC on Cognitive Robotics (2014 –).
- Member of the Editorial Board of *Cognitive Systems Research* (2015 –).
- Member of the Editorial Board of *The IEEE Trans. Cognitive and Developmental Systems* (2016 – 2018).
- Member of the Editorial Board of *The Computer Journal* (2013 - 2015).
- Advisory Board Member, Innopolis University, Russia (2013 – 2016).
- Nominated for Dozentenpreis (prize for teaching excellence), Technical University of Munich (2013).
- Editor of the Springer book series *Cognitive Systems Monographs* (2008 –).
- Member of the Editorial Board of *Cognitive Computation* Journal (2008 – 2013).
- Member of the Editorial Board of *Image and Vision* Computing Journal (2008 – 09).
- Senior Membership of the IEEE (2003).
- General & Program Chairman, 6th European Conference on Computer Vision - ECCV, Trinity College Dublin (2000).
- Fellow of Trinity College Dublin & Member of the Senate of the University of Dublin (1991).
- Chartered Member of the Institution of Engineers of Ireland (1990).
- Awarded the Collen Prize for best final year engineering project, Trinity College Dublin (1979).

Interests

I am a keen road cyclist and I have completed the Wicklow 200, the Sean Kelly Classic, an Etape du Tour, the Marmotte, the Vätternrundan, and a seven-day 777 km fundraising tour of Rwanda. I'm passionate about cognitive robotics and I write software whenever I have the opportunity. My Myers-Briggs Type is INFJ.

Employment History

2022 - **Carnegie Mellon University Africa**
Rwanda
Position: Research Professor
Duties: Develop a sustainable research program in robotics and build links with industry and universities in Africa.

2021 - 2022 **Carnegie Mellon University Africa**
Rwanda
Position: Visiting Professor
Duties: Grow the robotics program, embracing teaching, research, and outreach to other universities in Africa; please refer to *Academic Experience*, p. 6.

2020 - 2021 **Institute for Artificial Intelligence, University of Bremen**
Germany
Position: Senior Researcher
Duties: Research and development in cognition-enabled robot manipulation in everyday activities, with specific responsibility for cognitive architectures.

2017 - 2020 **Carnegie Mellon University Africa**
Rwanda
Position: Teaching Professor
Duties: please refer to *Academic Experience*, p. 6.

2013 - 2016 **University of Skövde**
Sweden
Position: Professor of Informatics
Duties: please refer to *Academic Experience*, p. 6.

2011 - 2013 **Institute for Cognitive Systems, Technical University of Munich**
Germany
Position: Senior Researcher
Duties: please refer to *Academic Experience*, p. 6.

2010 - 2011 **Independent Researcher: Cognitive Systems and Computer Vision**

2006 - 2010 **Khalifa University of Science, Technology and Research**
United Arab Emirates
Position: Professor of Computer Engineering & Head of Department
Duties: please refer *Academic Experience*, p. 6.

2005 - 2006 **University of Genova**
Italy
Position: Coordinator of *euCognition* – The European Network for the Advancement of Artificial Cognition Systems (www.euCognition.org). Technical coordinator of the *RobotCub* project (www.RobotCub.org)
Duties: Coordination of the network activities. Coordination of the development of a cognitive humanoid robot, with particular responsibility for the cognitive architecture.

2002 **Science Foundation Ireland**
Ireland
Position: Senior Programme Officer (Software – ICT).
Duties: Development and management of research funding programmes; liaison with the academic and industrial community.

1998 - 2005 **Etisalat College of Engineering (later to become Khalifa University)**
United Arab Emirates
Position: Professor of Computer Engineering, Head of Department, & Acting-Director of Postgraduate Studies.
Duties: please refer *Academic Experience*, p. 6.

1995 - 1999 **National University of Ireland, Maynooth**
Ireland
Position: Professor of Computer Science and Head of Department.
Duties: please refer to *Academic Experience*, p. 6, and *Experience in Leadership and Strategic Planning*, p. 11.

1991 - 1993 **Commission of the European Communities**
Belgium
DGXIII Directorate General for Information Technologies, Telecommunications and Innovation, Brussels.
Position: Scientific Officer, Grade A6.
Duties: Co-ordination and administration of research projects; assisted in setting up *ESSI* – the European Systems and Software Initiative. See also *Experience in Leadership and Strategic Planning*, p. 11.

1983 - 1995 **Trinity College Dublin**
Ireland
Position: Lecturer and Information Services Project Officer.
Duties: please refer to *Academic Experience*, p. 6, and *Experience in Leadership and Strategic Planning*, p. 11.

1981 - 1985 **Trinity College Dublin**
Ireland
Ph.D. candidate.

1979 - 81 **Westinghouse Electric Corp.,**
Pittsburgh, PA, U.S.A.
Shannon, Ireland.
Position: Systems Software Engineer; System Integrator; Project Leader.
Duties: Development of a database maintenance system for the Westinghouse Energy Management Systems (EMS).
Design of a diagnostic module for a distributed control system.

Offices Held

- Member of the IEEE Robotics and Automation Society Women in Engineering Committee (2022 –).
- Co-organizer of a workshop on new horizons in cognitive robotics and AI exploiting recent advances for predictive control and prospective interaction between agents, 2018 IEEE International Conference on Robotics and Automation.
- Founding co-chair of the IEEE Technical Committee on Cognitive Robotics; www.ieee-coro.org (2015 - 2021); now co-chair emeritus.
- Chair of the Carnegie Mellon University Africa Admissions Committee (2018 – 2019).
- Joint coordinator of the AI and Cognition in Robotics Topic Group in the SPARC partnership for robotics in Europe (www.sparc-robotics.net)
- Associate editor of *Cognitive Systems Research* (2015 –).
- Series Editor of the Springer book series *Cognitive Systems Monographs* (2008 –).
- Associate editor of the *IEEE Transactions on Cognitive and Developmental Systems* (2015 - 2017).
- Member of the editorial board of *The Computer Journal* (2013 - 2015)
- Member of the editorial board of *Cognitive Computation* (2008 - 2013).
- Member of the editorial board of *Image and Vision Computing* Journal (2008 - 2009)
- Member of the editorial board of AI Magazine, published by the AAAI (2007 - 2012).
- Guest Editor of a special issue of *Image and Vision Computing* on Cognitive Vision Systems, Vol. 26, No. 1, January 2008.
- Coordinator of euCognition – the European Network for the Advancement of Artificial Cognitive Systems (2006 - 2008).
- Member of the Steering Board of the Imaging Faraday Partnership, UK (2004 - 2006).
- Coordinator of ECVision – the European Research Network for Cognitive Computer Vision Systems (2002 - 2005).
- Member of the Board of the European Conference on Computer Vision ECCV (2000 -).
- General Chair of the Sixth European Conference on Computer Vision – ECCV 2000 – Trinity College Dublin (2000).
- Reviewer for various journals, including: *IEEE Transactions on Cognitive and Developmental Systems, Cognitive Systems Research, Constructivist Foundations, International Journal for Robotics Research; Artificial Intelligence, Software Practice and Experience, IEEE Transactions on Evolutionary Computing, Image and Vision Computing, Optical Engineering, Interaction Studies, IEEE Transactions on Autonomous Mental Development, Journal of the Optical Society of America, Machine Vision Applications, Robotics and Autonomous Systems, Advanced Robotics Systems,*
- Member of the Program Committee of various conferences, including:
  - 17th Conference on Principles of Knowledge Representation and Reasoning (KR 2020)
  - Workshop on Cognitive Vision - Integrated Vision and AI for Embodied Perception and Interaction, Seventh Annual Conference on Advances in Cognitive Systems (ACS 2019)
  - 7th International Workshop on Artificial Intelligence and Cognition (AIC2019)
  - International Symposium on Robotics Research (ISRR 2019)
  - IEEE International Workshop on Advanced Robotics and its Social Impacts (2018)
  - First IEEE International Conference on Robotic Computing (2017)
  - International Conference on Robot Ethics and Standards (ICRES 2018, 2020)

- EuroAsianPacific Joint Conference on Cognitive Science (2015)
- 10th International Conference on Computer Vision Systems (2015)
- 14th International Conference on the Synthesis and Simulation of Living Systems (2014)
- 27th International Florida Artificial Intelligence Research Society Conference (2014)
- Brain Inspired Cognitive Systems (BICS 2012, 2013)
- Third International Workshop on Cognitive Information Processing (CIP 2012)
- International Conference on Cognitive Systems, University of Karlsruhe, 2008
- International Cognitive Vision Workshop (ICVW 2007)
- IEEE/RSJ 2007 International Conference on Intelligent Robots and Systems (IROS 2007)
- European Conference on Complex Systems (ECCS 2006, 2007)
- IEEE-RAS International Conference on Humanoid Robots (Humanoids 2006)
- 4th International Conference on Development and Learning (ICDL '05)
- IEEE International Conference on Computer Vision (ICCV '05)
- IEE International Conference on Visual Information Engineering - VIE 2005 - Convergence in Graphics and Vision (2005)
- International Conference on Computer Vision Systems - ICVS (2003)
- European Conference of Artificial Intelligence (2002)
- Computer Vision and Pattern Recognition Conference (CVPR), Montreal, Canada (2002)
- Second International Workshop on Computer Vision Systems, Vancouver, Canada (2001)
- 8th Int. Workshop on the Cognitive Science of Natural Language Processing (1999)
- Irish Machine Vision and Image Processing Conferences (1998-2020)
- IROS'96: IEEE/RSJ International Conference on Intelligent Robots and Systems (1996)
- European Conference on Computer Vision (1994 - 2006)

- Member of the Board of the Irish Pattern Recognition Society (1999 -).
- General Chair of the Joint Conference of the Optical Engineering Society of Ireland and the Irish Machine Vision and Image Processing Conference (OESI – IMVIP'98), National University of Ireland, Maynooth (1998).
- Opponent (i.e. External Examiner) at Royal Institute of Technology, Stockholm, Sweden (2011), Instituto Superior Tecnico, Lisbon (2015), Linköping University (2016), Örebro University (2016).
- External Examiner of the School of Computer Application, Dublin City University (1997-2001) and the Department of Computer Science and Information Systems, University of Limerick (1997-2000).
- External Ph.D./M.Sc. examiner at University of Dublin, Trinity College (1996, 1997, 1998, 2001); University of Ulster (1998); Dublin City University (1995, 1998, 2000, 2007). University of Limerick (1994), Salford University (1995), Regional Technical College, Cork (1995).
- Member of the Society of Photo-Optical and Instrumentation Engineers (SPIE) Chapter Committee (1996).
- Information Systems Project Officer, Trinity College, Dublin (1993 to 1995)
- Member of the Review Panel of the British Engineering and Physical Sciences Research Council (EPSRC) for Machine Vision Research Grants 1994, 1995, 1996.
- Member of the Joint Steering Committee for Information Services and Information Technology of the Tallaght Regional Hospital (appointed 1994).
- Chair of the Programme Committee of the ESPRIT Workshop on "Multisensor Applications", Brussels, November 1993.

- Member of the ESPRIT (European Strategic Programme for Research and Development in Information Technology) Basic Research Action Working Group in Vision; 1989 - 1991.
- Director of the Vision and Sensor Research Unit in the Irish Advanced Manufacturing Technology Programme: 1987 to 1990.
- Chair of the Programme Committee of the ESPRIT Basic Research Action Workshop on "Vision in Context", Killarney, Ireland, September 1991.

Academic Experience

I began teaching on a part-time basis in 1981 and in October 1983 I was appointed a Lecturer in Computer Science at Trinity College, Dublin. In 1990, I successfully passed the Merit Bar. During the past forty years, I have been responsible for the development of several new courses and degree programs at both undergraduate and postgraduate levels. Most of these courses are available online at www.vernon.eu.

2017 -	18-799 Applied Computer Vision, 18-799 Artificial Cognitive Systems, 18-799 Cognitive Robotics, 04-630 Data Structures and Algorithms for Engineers, 18-799 Robotics: Principles and Practice, 18-899 Neurorobotics, 18-899 Human-Robot Interaction. Carnegie Mellon University Africa, Rwanda.
2015 - 2016	IT920F Project Management; IT921F Cognitive Systems: M.Sc. & Ph.D., University of Skövde, Sweden.
2014	Cognitive Systems: Ph.D. School, University of Genova, Italy.
2014 - 2015	CS-CO-412 Algorithms and Data Structures, CS-AI-421 Artificial Cognitive Systems: Bachelor degree in IT, Innopolis University, Republic of Tatarstan, Russia.
2013 - 2016	IT919F / IT706A Scientific Theory in Informatics: M.Sc. & Ph.D., University of Skövde, Sweden.
2012	Cognitive Architectures: Diplom & M.Sc., Technical University of Munich, Germany.
2011	Cognitive Systems: Ph.D. School, University of Genova, Italy.
2006 - 2010	E424 Software Engineering; E314 Algorithms & Data-Structures, E313 Relational Database Systems: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
2004 - 2006	Cognitive Systems: University of Genova, Italy.
2003 - 2005	E412 Computer Interfaces: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
2000 - 2005	E424 Software Engineering: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1999 - 2005	E410 Computer Graphics: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1998 - 2001	E314 Algorithms and Data-Structures: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1998 - 2001	E004 Computer Technology: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1998	E415 Operating Systems: B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1998 - 2001	E313 Relational Database Systems. B. Eng. in Computer Engineering, Khalifa University, United Arab Emirates.
1998	Designed a new B.Sc. in Organizational Information Technology Systems, a 4-Year honours degree which was targetted at meeting the needs of business and industry.
1997	Designed and implemented a new B.Sc. in Computer Science and Software Engineering, a 4-Year honours degree which complies with the ACM/IEEE Model Curriculum.
1996	Designed and implemented a new M.Sc. in Software Engineering, the first of its kind in Ireland.
1996 - 1998	M209: Object -Oriented Programming and C++: M.Sc. in Software Engineering at the National Univerity of Ireland, Maynooth, Ireland.
1995 - 1998	CS110: Introduction to Computer Systems: B.Sc. at the National University of Ireland, Maynooth, Ireland.
1995 - 1998	CS211: Data Structures II: B.Sc. at the National University of Ireland, Maynooth, Ireland.
1995 - 1998	CS410: Computer Vision: B.Sc. at the National University of Ireland, Maynooth, Ireland.

1995	Course Director of a new M.Sc. Degree in Computer Science, Trinity College, Dublin
1989 - 1991	Computer Science, 2nd year course, B.A.I. in Engineering Science, Trinity College Dublin, Ireland.
1989 - 1991	Computer Vision: M.Sc. in Computer Applications, Department of Computer Applications, Dublin City University.
1989	Computer Vision: M.I.E. (Masters of Industrial Engineering), Department of Industrial Engineering, University College Galway.
1988 - 1995	4BA10 Computer Vision: B.A. (Mod.) in Computer Engineering, 4th year course,Trinity College Dublin, Ireland.
1983 - 1988	Information Technology: M.Sc. in Physical Sciences in Medicine, Trinity College Dublin, Ireland.
1983 - 1988	Computer-Aided Engineering – Robotics and Robot Vision: B.A.I. in Engineering Science, 4th year course,Trinity College Dublin, Ireland.
1987	Computers and Society: B.A. (Mod.) in Computer Engineering; 2nd year course, Trinity College Dublin, Ireland.
1987	The Engineer and Society: B.A.I. in Engineering Science; 4th year course, Trinity College Dublin, Ireland.
1981 - 1987	Structured Programming: B.Sc. in Computer Science; 2nd year course, Trinity College Dublin, Ireland.

Funded Research Projects

2023-2025 **Afretec Inclusive Digital Transformation Research Grant Programme: Culturally Sensitive Social Robotics for Africa**
Principal Investigator

2016-2017 **Horizon 2020 Coordination Action 688441: RockEU2 – Robotics Coordination Action for Europe Two**
Cognitive Systems Work Package Co-Leader

2014-2018 **FP7 Integrated Project 611391: DREAM – Development of Robot-Enhanced therapy for children with autism spectrum disorder (ASD).**
Research Director

2004-2010 **FP6 Integrated Project 004370: RobotCub – Robotic Open-Architecture Technology for Cognition, Understanding, and Behaviours.**
Technical Coordinator

2009-2010 **A Semi-autonomous Mobile Robotic C4ISR System for Urban Search and Rescue.**
UAE ICT Fund

2006-2008 **FP6 Coordination Action 26408: euCognition – the European Network for the Advancement of Artificial Cognitive Systems**
Network Coordinator.

2002-2005 **FP5 Coordination Action 35454: ECVision – European Research Network for Cognitive Computer Vision Systems**
Network Coordinator.

1998-2000 **Measurement and Analysis of 3-D Facial Structure for the Assessment of Reconstructive Surgical Procedures**
Enterprise Ireland Software Programme for Advanced Technology (PAT).

1996-1999 **ESPRIT research project 21894 funded by the CEC: Visual Intelligent Recognition for Secure Banking Services (VIRSBS).**
In collaboration with University of Genova, Italy, Ecole Polytechnique Federale de Lausanne, Switzerland, Instituto Superior Tecnico de Lisboa, Portugal, and Logitron s.r.l., Italy.

1996-1997 **ESPRIT research project 23009 funded by the CEC: Promotion of OMI by a user support network centre (PROMINENT).**
In collaboration with Institut fur Mikroelecktonik- und Mechatronik-Systeme, Germany, Joanneum Research, Austria, SINTEF, Norway, and University of Ulster, UK.

1996-1999 **ESPRIT research project 20557 funded by the CEC: High Speed Manipulation by Random Access Vision (RAMAP).**
In collaboration with Siemens, Germany, IMEC, Belgium, and Egemin, Belgium.

1994-1995 **ESPRIT Basic Research Action: HPCNet - Network of Excellence in High Performance Computing**
Founding Member.

Funded Research Projects (Continued)

1990-1993 **ESPRIT research project funded by the CEC: Glove-like Advanced Interface for the Control of Manipulative and Exploratory Procedures in Artificial Realities.**
In collaboration with Aitek Srl, Italy, Scuola Superiore S. Anna, Italy, TAG Ltd., U.K., Eidetics Ltd., Ireland, V.D.S. Spa., Italy.

1990-1993 **BRITE/EURAM research project funded by the CEC: Optical In-Process Inspection of Electro-Plated Contact Surfaces.**
In collaboration with Siemens AG, Federal Republic of Germany, and Zenon SA, Greece.

1989-1991 **Strategic Research Contract from the Irish Science and Technology Agency: EOLAS.**
The purpose of this research is to develop "Applied Tools for Vision", requiring the design of a sixteen-node MIMD parallel processor (using transputer technology) and the development of an Application Programming Shell.

1989 -1991 **Fundamental Research in Neural Networks.**
Collaborative research with the Hitachi Dublin Laboratory (HDL), O'Reilly Institute for Communication and Technology, Trinity College.

1987-1989 **NBST (National Board for Science and Technology) Strategic Research Contract.**
Development of a reconfigurable vision processor for industrial machine vision applications using transputer technology.

1984-1989 **ESPRIT Project 419 - Image and Movement Understanding.**
Principal investigator. The objective of the project is the automatic understanding of general 3-D scenes using multiple stereoscopic 2-D images. This research was undertaken in collaboration with the University of Genova, the University of Nijmegen, CAPTEC Ltd. in Dublin, and VDS Ltd. in Florence.

Funded Teaching Projects

2019-2020 **IEEE Robotics and Automation Society Program for Creation of Educational Material in Robotics and Automation (CEMRA).**
Awarded a grant to prepare an introductory course on cognitive robotics for global dissemination to the cognitive robotics community.

Supervision of Higher Degrees

Completed Degrees

P. Kenny	M.Sc. 1987	Digital Image Registration Techniques Applied to Radio-Aerosol Imaging in Nuclear Medicine.
K. Dawson	Ph.D. 1991	3-D Computer Vision for Automated Part Manipulation.
Y. Zhao	M.Sc. 1991	An Entropy view of Stereo Fusion.
M. Flanagan	M.Sc. 1992	Perceptual Grouping Processes.
P. O'Neill	M.Sc. 1992	Real-Time Visual Pose Estimation of Human Hands.
M. Jones	M.Sc. 1993	Visual Servo-Control of Robots by Kohonen Nets.
R. Doyle	M.Sc. 1994	Adaptive Servo-Control of a Scara Robot.
R. Waldron	Ph.D. 1995	Language and the Construction of Reality.
T. Lysaght	M. Comp.Sc. 1996	Timbre Morphing
D. Barry	M.Sc. 1998	Active Visual Attention
P. Butler	M.Sc. 1998	3-D surface profiling and analysis of human faces in reconstructive surgery
A. Trenaman	Ph.D. 1999	Evolutionary Computation
P. Thomas	M.Sc. 2002	Automatic Image Registration using Genetic Algorithms
A. Kulaib	M.Sc. 2009	2-D Binaural Sound Localization
E. Basaeed	M.Sc. 2009	Multi-spectral Image Fusion for Victim Detection in Urban Search-And-Rescue Robots
H. AlKaabi	M.Sc. 2009	A Human-Robot Interface for Urban Search-And-Rescue Robots
R. Abdullah	M.Sc. 2009	Selective Visual Attention for Urban Search and Rescue (USAR) Systems

Experience in Leadership and Strategic Planning

Apart from my general professional responsibilities over the past forty-five years, I have gained significant experience in strategic planning, in both leadership and support roles.

The European Systems and Software Initiative

Arising from my appointment as a Scientific Officer in the Commission of the European Communities (now the European Commission) in 1991, where I worked for over two years, I was exposed to many facets of project co-ordination and administration in ESPRIT (European Strategic Programme for Research and Development in Information Technology). However, my most significant contribution to strategic planning was as a member of a small team which developed and launched the pilot phase of the innovative European Systems and Software Initiative (ESSI). The ESSI programme model involved intensive consensus-building in industry and reflected the needs of small and medium-sized companies across Europe. Its innovative character necessitated a wide-spread awareness programme prior to and following the launch of the call for proposals in which I was centrally involved. The success of ESSI resulted in its being adopted as a template for best practice in other Commission programmes.

The Development of a Policy on Information Systems for the University of Dublin

In 1993 I was invited by Trinity College Dublin to return from leave of absence at the European Commission to take up the post of Information Systems Project Officer with the remit of coordinating the development of a comprehensive policy on information systems. Under the stewardship of the Bursar of the College, Prof. Frances Ruane, the chair of the Information Systems Policy Development Group (or ISPDG as it became known), some 130 people participated in this exercise and approximately 31,000 hours of combined effort were expended over the next two years in bringing it to a successful conclusion.

My activities in this exercise focused on:

- its total commitment to transparency and consensus-building; the vast bulk of the work being concerned with empowering and equipping users to identify their information needs and the subsequent construction of a common vision for information system;
- the clear recognition that information systems are people- and organization-centred and that technology, *per se*, plays only a supporting role;
- the successful preparation of a plan for the re-organization of the University's IT Centre to enable it to provide the service the users had identified;
- the successful preparation of a 5-year IT plan comprising 44 projects for the commissioning of information systems and services.

Head of the Department of Computer Science, National University of Ireland, Maynooth

In 1995 I was appointed to the Chair of Computer Science at Maynooth and the Headship of the Department. At the time, the Department operated a small number of courses at an undergraduate level as part of the general science degree programme. During my tenure in Maynooth, I was responsible for the strategic development of the Department in many key areas such as:

- design and implemention a new B.Sc. in Organizational Information Technology Systems, a 4-Year honours degree which is targetted at meeting the needs of business and industry;
- design and implemention a new B.Sc. in Computer Science and Software Engineering, a 4-Year honours degree which complies with the ACM/IEEE Model Curriculum;
- design and implemention of a new M.Sc. in Software Engineering, the first of its kind in Ireland;
- the launch of a human resources development and training policy;
- the commissioning of a new information systems infrastructure;
- a doubling of academic and support personnel;
- successfully securing funding for a new Computer Science building.

Coordinator of the European Research Network for Cognitive Vision Systems

For the three years from 2002 to 2005 I coordinated *ECVision*, the European Research Network for Cognitive Vision Systems (www.ecvision.org). One of my responsibilities was to lead the development of a research roadmap that will guide the evolution of this embryonic discipline over the next ten years. This was a challenging task because there is significant disagreement in the community as to the extent and focus of the discipline. Nevertheless, the roadmap had to reflect a general consensus and the challenge was to achieve this without disenfranchising anyone. After many meetings, workshops, and bi-lateral communications, we agreed a plan which is the product of over forty researchers, which represents their many different viewpoints in a fair and balanced manner, and which sets out an inclusive and ambitious research agenda.

Coordinator of the European Network for the Advancement of Artificial Cognitive Systems

For the three years from 2006 to 2008 I coordinated *euCognition*: the European Network for the Advancement of Artificial Cognitive Systems (www.eucognition.org). This is an interdisciplinary network with members drawn from a great variety of backgrounds, including computer science, cognitive science, neuroscience, psychology, artificial life, robotics, and philosophy. My role as coordinator of the network was to engender discussion and debate in the scientific community with a view to focussing research efforts, creating new educational resources, and advancing the cause of this emerging discipline. A key challenge of the network was to foster interaction between all the many different scientific sectors involved in this multi-disciplinary area and to help create truly inter-disciplinary perspectives. By 2008, membership has grown to 370, exceeding the stated target by 300%. The European Commission subsequently funded a follow-on project to continue the network in 2009-2011. There are now more than 900 members.

Member of the Academic Advisory Panel of Innopolis University

As member of its Academic Advisory Panel, since 2013 I have contributed extensively to the launch of Russia's first university dedicated to advanced computer science and its application (university.innopolis.ru/en). I have advised on curriculum development, participated in student recruitment, reviewed approximately one hundred applications for faculty positions and interviewed almost half of the applicants. I have also assisted with the design of the university organizational structure and advised on the creation of most of their academic procedures, including the Faculty Development and Evaluation manual, for which I designed the annual evaluation process. I also taught two courses to the inaugural class and participated in industrial liaison exercises.

Research Director of the DREAM Project

DREAM (www.dream2020.eu) is a 4.5-year European project aimed at developing software for robot-enhanced therapy for children with Autism Spectrum Disorder (ASD). Our goal is to extend robot-assisted therapy (RAT) by giving the robot greater autonomy to conduct the therapy intervention. To achieve the required level of autonomy, the robot must be able to gather sensory data about the child, assess psychological disposition and behaviour, and adjust its actions accordingly when mediating the therapy intervention. I also have responsibility for software integration, a task made easier by our adoption of Component-Based Software Engineering (CBSE).

SPARC – The Partnership for Robotics in Europe

Since February 2016, I have been a partner in a coordination and support action for SPARC – The Partnership for Robotics in Europe – which brings together the European Commission and euRobotics aisbl, an association for Europe's industrial and academic stakeholders in robotics. I have specific responsibility for coordinating the activities on cognitive systems (www.cognitiverobotics.eu). Our goal is to engage the robotics, AI, and cognitive systems communities in Europe with the goal of formulating a meaningful strategy to make cognitive robotics a mainstream industrial technology.

Chair of the Admissions Committee, Carnegie Mellon University Africa
From 2018 to 2019 I took charge of the admissions process for two masters programs: a Masters in Information Technology (MSIT) and a Masters in Electrical and Computer Engineering (MSECE). This involved an in-depth exercise in business process re-engineering, as part of which I modelled the admissions processes for both degrees, revealing hidden complexity and opportunities for rationalizing each process (the state transition diagrams for the MSIT and MSECE admissions process comprise 40 and 30 discrete states, respectively). I also created a comprehensive 57-page admissions guide, setting out the complete admissions process for both programs, including a specification of the application verification procedure and detailed task descriptions for each member of an Admissions Team that was subsequently formed as a consequence of this exercise. I also took responsibility for training the members of the Admissions Team.

Publications (in reverse chronological order by category)

Most of the following publications are available online at www.vernon.eu.

Books Authored

1. Vernon, D. *Artificial Cognitive Systems – A Primer*, MIT Press, ISBN 978-0-262-02838-7, 265 pages, 2014.
2. Vernon, D., von Hofsten, C., and Fadiga, L. *A Roadmap for Cognitive Development in Humanoid Robots*, Cognitive Systems Monographs (COSMOS), Springer, ISBN 978-3-642-16903-8, 250 pages, 2010.
3. Vernon, D. *Fourier Vision*, Kluwer Academic Publishers, Norwell, Mass., ISBN 0-7923-7413-4, 195 pages, 2001.
4. Vernon, D. *Machine Vision: Automated Visual Inspection and Robot Vision,* Prentice-Hall International (UK) Ltd., 260 pages, ISBN 0-13-543398-3, 1991.

Books Edited

5. Lieto, A., Bhatt, M., Oltramari, A., and Vernon, D. (eds.). *Proceedings of the 4th International Workshop on Artificial Intelligence and Cognition* (AIC 2016), New York City, NY, USA, July 16-17, CEUR Workshop Proceedings, Vol 1895, 2016.
6. Vernon, D. (Ed.). *Proceedings of the Sixth European Conference on Computer Vision,* LNCS Vols. 1842 & 1843, Springer-Verlag, Heidelberg, 953 & 881 pages, respectively, ISBN 3-540-67685-6 & 3-540-67686-4, 2000.
7. Vernon, D. (Ed.). *Proceedings of the Optical Engineering Society of Ireland & Irish Machine Vision and Image Processing Joint Conference, National University of Ireland, Maynooth*, 316 pages, 1998.
8. Vernon, D. (Ed.). *Computer Vision: Craft, Engineering, and Science,* Springer-Verlag, Heidelberg, 96 pages, ISBN 3-540-57211-2, 1994
9. Pfleger, S., Goncalves, J, and Vernon, D. (Eds.) *Data Fusion Applications,* Springer-Verlag, Heidelberg, 265 pages, ISBN 3-540-56973-1, 1993.
10. Vernon, D. and Sandini, G. (Eds.) *Parallel Computer Vision: The VIS à VIS System,* Ellis-Horwood, UK, 276 pages, ISBN 0-13-932716-9, 1992.

Book Reviews

11. *Vision: Variations on Some Berkeleian Themes*, Robert Schwartz, Oxford, Basil Blackwell, in *Berkeley Newsletter,* No. 13, pp. 13-14., 1994.

Journal Articles

12. D. Vernon and G. Sandini, "The Importance of Being Humanoid", International Journal of Humanoid Robotics, 20th anniversary issue, February, 2023.
13. A. Akinade, Y. Haile, N. Mutangana C. Tucker, and D. Vernon, "Culturally Competent Social Robots Target Inclusion in Africa", Science Robotics, Focus article, 2023.
14. A. Sciutti, M. Beetz, T. Inamura, A. Korsah, J. Oh, G. Sandini, S. Shimoda, D. Vernon, "The Present and the Future of Cognitive Robotics", IEEE Robotics and Automation Magazine, Technical Committee Spotlight, pp. 160-163, September 2023.

15. Vernon, D., Albert, J., Beetz, M., Chiou, S.-C., Ritter, H, and Schneider, W. X. "Action Selection and Execution in Everyday Activities: A Cognitive Robotics & Situation Model Perspective", Topics in Cognitive Science, pp. 1-19, DOI: 10.1111/tops.12569.

16. Besold, T. R., Zaadnoordijk, L., and Vernon, D. "Feeling Functional: A Formal Account of Artificial Phenomenology", Journal of Artificial Intelligence and Consciousness, Vol. 8, No. 1, pp. 147-160, 2021.

17. Billing, E., Belpaeme, T., Cai, H., Cao, H.-L., Ciocan, A., Costescu, C., David, D., Homewood, R., Hernandez Garcia, D., Gómez Esteban, P., Liu, H., Nair, V., Matu, S., Mazel, A., Selescu, M., Senft, E., Thill, S., Vanderborght, B., Vernon, D., and Ziemke, T. "The DREAM Dataset: Supporting a data-driven study of autism spectrum disorder and robot enhanced therapy", PLOS ONE, 2020.

18. Vernon, D. "Robotics and Artificial Intelligence in Africa", IEEE Robotics & Automation Magazine, Vol. 26, No. 4, pp. 131-135, December 2019.

19. Vernon, D. "Internal simulation in embodied cognitive systems, Comment on '*Muscleless* motor synergies and actions *without movements*: From motor neuroscience to cognitive robotics' by Vishwanathan Mohan *et al.*", Physics of Life Reviews, 2019.

20. Cai, H., Fang, Y., Ju, Z., Costescu, C., David, D., Billing, E., Ziemke, T., Thill, S., Belpaeme, T., Vanderborght, B., Vernon, D. Richardson, K., and Liu, H., "Sensing-enhanced Therapy System for Assessing Children with Autism Spectrum Disorders: A Feasibility Study", IEEE Sensors Journal, Vol, 19, Issue 4, 2019.

21. Cao, H.-L., Gomez Esteban, P., Baxter, P., Belpaeme, T., Billing, E., Cai, H., Coeckelbergh, M., Costescu, C., David, D., De Beir, A., Hernández García, D., Kennedy, J., Liu, H., Matu, S., Mazel, A., Kumar Pandey, A., Richardson, K., Senft, E., Thill, S., Van de Perre, G., Vanderborght, B., Vernon, D., Wakanuma, K., Yu, H., Zhou, X., Ziemke, T. "Robot-Enhanced Therapy: Development and Validation of a Supervised Autonomous Robotic System for Autism Spectrum Disorders Therapy", IEEE Robotics & Automation Magazine, Vol. 26, No. 2, pp. 49-58, June 2019.

22. Vernon, D. "Further Support for the Stabilization Thesis: Circular Causality, Ecosystems Growth & Development, and Allostasis", Open Peer Commentary, Constructivist Foundations, Vol. 13, No. 3, pp. 376-377, 2018.

23. Lieto, A., Bhatt, M., Oltramari, A. and Vernon, D. "The Role of Cognitive Architectures in General Artificial Intelligence", editorial for a special issue on "Cognitive Architectures for Artificial Minds", Cognitive Systems Research, Vol. 48, pp. 1-3, 2017.

24. Esteban, P. G., Baxter, P., Belpaeme, T., Billing, E., Cai, H., Cao, H.-L., Coeckelbergh, M., Costescu, C., David, D., De Beir, A., Fang, Y., Ju, Z., Kennedy, J., Liu, H., Mazel, A, Pandey, A., Richardson, K., Senft, E., Thill, S., Van de Perre, G., Vanderborght, B., Vernon, D., Yu, H., and Ziemke, T., "How to Build a Supervised Autonomous System for Robot-Enhanced Therapy for Children with Autism Spectrum Disorder", Paladyn, J. Behav. Robot., Vol. 8, pp. 18-38, 2017.

25. Vernon, D., von Hofsten, C., and Fadiga. L., "Desiderata for Developmental Cognitive Architectures", Biologically Inspired Cognitive Architectures, Vol. 18, pp. 116–127, 2016.

26. Vernon, D. "Reconciling Constitutive and Behavioural Autonomy: The Challenge of Modelling Development in Enactive Cognition", Intellectica, Vol. 65, pp. 63-79, 2016.

27. Vernon, D., Billing, E., Hemeren, P., Thill, S., and Ziemke, T. "An Architecture-oriented Approach to System Integration in Collaborative Robotics Research Projects — An Experience Report", Journal of Software Engineering for Robotics, Vol. 6, No. 1, pp. 15-32, 2015.

28. Vernon, D., Lowe, R., Thill, S., and Ziemke, T. "Embodied Cognition and Circular Causality: On the Role of Constitutive Autonomy in the Reciprocal Coupling of Perception and Action", Frontiers in Psychology, Vol. 6, No.1660, doi: 10.3389/fpsyg.2015.01660, October 2015.

29. Vernon, D, Beetz, M., and Sandini, G., "Prospection in cognition: the case for joint episodic-procedural memory in cognitive robotics", Frontiers in Robotics and AI, Vol. 2, No. 19, doi: 10.3389/frobt.2015.00019, July 2015.

30. Vernon, D. "Goal-directed Action and Eligible Forms of Embodiment", Open Peer Commentary, Constructivist Foundations, Vol. 9, No. 1, pp. 85-86, 2013.

31. Vernon, D. "Interpreting Ashby – But which One?", Open Peer Commentary, Constructivist Foundations, Vol. 9, No. 1, pp. 111-113, 2013.

32. Vernon, D. "Enaction as a Conceptual Framework for Developmental Cognitive Robotics", Paladyn. Journal of Behavioral Robotics, Vol. 1, No. 2, pp. 89-98, 2010.

33. Metta, G., Natale, L., Nori, F., Sandini, G., Vernon, D., Fadiga, L., von Hofsten, C., Santos-Victor, J., Bernardino, A., Montesano, L. "The iCub Humanoid Robot: An Open-Systems Platform for Research in Cognitive Development", Neural Networks, Special issue on Social Cognition: From Babies to Robots, Vol. 23, pp. 1125-1134, 2010.

34. Vernon, D. "Cognitive Vision: The Case for Embodied Perception", Image and Vision Computing, Special Issue on Cognitive Vision, Vol. 26, No. 1, pp. 127-141, 2008.

35. Vernon, D. "Guest Editor Introduction", Image and Vision Computing, Special Issue on Cognitive Vision, Vol. 26, No. 1, pp. 1-4, 2008.

36. Vernon, D., Metta. G., and Sandini, G. "A Survey of Artificial Cognitive Systems: Implications for the Autonomous Development of Mental Capabilities in Computational Agents", IEEE Transactions on Evolutionary Computation, special issue on Autonomous Mental Development, Vol. 11, No. 2, pp. 151-180, 2007.

37. Tsagarakis, N.G., Metta, G., Sandini, G., Vernon, D., Beira, R., Santos-Victor, J., Carrazzo, M.C., Becchi, F. and Caldwell, D.G., "iCub - The Design and Realisation of an Open Humanoid Platform for Cognitive and Neuroscience Research", International Journal of Advanced Robotics, Vol. 21 No. 10, pp. 1151-75, 2007.

38. Ghita, O. Whelan, P, Vernon, D. and Mallon, J. 2007 "Pose estimation for objects with planar surfaces using eigenimage and range data", Machine Vision and Applications, Springer Berlin / Heidelberg, Volume 18, Number 6 / December, pp. 355-365, 2007.

39. Vernon, D., Metta, G., and Sandini, G. "Una panoramica sui sistemi cognitivi artificiali", Sistemi Intelligenti, 2007.

40. Vernon, D. "Cognitive Vision: The Development of a Discipline", KI-Zeitschrift Künstliche Intelligenz, German Society for Informatics, April, Special Issue on Cognitive Computer Vision, pp 38-41, 2005.

41. Vernon, D. "A Binocular Model for Figure-Ground Segmentation in Translucent and Occluding Images", *Optical Engineering*, Vol. 41, No. 10, pp. 2525-2531, 2002.

42. Vernon, D. "Computation of Instantaneous Optical Flow using the Phase of Fourier Components", *Image and Vision Computing*, Vol. 17, No. 3-4, pp. 189-198, 1999.

43. Vernon, D. "Computer Science: At the Crossroads of Humanity", Maynooth University Record, pp. 17-42, 1997.

44. Vernon, D. "The Dilemma of Emancipation in the Information Society", Studies in Education, Vol XIII, No. 1, pp. 26-33, 1997.

45. Vernon, D. "Phase-Based Measurement of Object Velocity in Image Sequences using the Hough Transform", *Optical Engineering*, Vol. 35, No 9, pp. 2620-2626, 1996.

46. Dawson-Howe, K. and Vernon, D. "3-D Object Matching Through Implicit Model Matching", *The International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI),* Vol. 9, No. 5, 1995.

47. Dawson-Howe, K. and Vernon, D. "Simple Pinhole Camera Calibration", *The International Journal of Imaging Systems and Technology,* Vol. 5, No. 1, pp. 1-6, (Spring), Wiley, UK.,1995.

48. Jones, M. and Vernon, D. "Using Neural Networks to Learn Hand Eye Co-ordination", Neural Computing and Applications, Springer Verlag, Vol. 2, No. 1, pp. 2-12, 1994.

49. Vernon, D. "Automatic Detection of Secondary Creases in Fingerprints", *Optical Engineering,* Vol. 32, No. 10, pp. 2612-2623, 1993.

50. Vernon, D. "The Power of Parallelism", *DGXIII Magazine*, Commission of the European Communities, No. 9, December, pp. 4-7, 1992.

51. Vernon, D. "Optical Non-Contact Sensing of Eye Motion", Journal of Biomedical Sciences, Vol. 2, No. 1, pp. 25-32, 1991.

52. Kenny, P.A., Dowsett, D.J., Vernon, D., and Ennis, J.T. "A Technique for Digital Image Registration used prior to Subtraction of Lung Images in Nuclear Medicine", *Physics in Medicine and Biology,* Vol. 35, No. 5, 679-685, 1990.

53. Vernon, D. and Tistarelli, M. "Using Camera Motion to Estimate Range for Robotic Parts Manipulation", *IEEE Transactions on Robotics and Automation.,* Vol.6, No. 5, pp.509-521, 1990.

54. Vernon, D. "A System for Robot Manipulation of Wires using Vision", *Robotica,* Vol. 8, pp. 47-60, Cambridge University Press, 1990.

55. Mahon, J., Harris, N., and Vernon, D. "Automated Visual Inspection of Solder Paste Deposition on Surface Mount Technology Printed Circuit Boards", *Computers in Industry,* Elsevier Science Publications B.V., Vol. 12, pp. 31-42, 1989.

56. Vernon, D. and Sandini, G. "VIS: A Virtual Image System for Image Understanding", Software Practice and Experience, Software - Practice and Experience, Vol. 18, No. 5, pp. 395-414, 1988.

57. Vernon, D. "2-D Object Recognition using Partial Contours", Image and Vision Computing, Vol. 5, No. 1, pp. 17-21, 1987.

Peer-Reviewed Conference Papers

58. P. Zantou and D. Vernon, "Culturally-Sensitive Human-Robot Interaction: A Case Study with the Pepper Humanoid Robot", Proc. IEEE Africon, Nairobi, Kenya, 2023.

59. Vernon, D. and Vincze, M. "Industrial Priorities for Cognitive Robotics", Proceedings of EUCognition 2016, Cognitive Robot Architectures, European Society for Cognitive Systems, Vienna, 8-9 December, 2016, R. Chrisley. V. C. Müller, Y. Sandamirskaya. M. Vincze (eds.), CEUR-WS Vol-1855, ISSN 1613-0073, pp. 6-9.

60. Vernon, D. "Two Ways (Not) To Design a Cognitive Architecture", Proceedings of EUCognition 2016, Cognitive Robot Architectures, European Society for Cognitive Systems, Vienna, 8-9 December, 2016, R. Chrisley. V. C. Müller, Y. Sandamirskaya. M. Vincze (eds.), CEUR-WS Vol-1855, ISSN 1613-0073, pp. 42-43.

61. Thill, S. and Vernon, D. "How to design emergent models of cognition for application-driven artificial agents", in *Integrating Computation and Cognition – Proceedings of the 14th Neural Computation and Psychology Workshop*, K. Twomey, G. Westermann, P. Monaghan, A. Smith (Eds.), 2016.

62. Ziemke, T, Thill, S., and Vernon, D., "Embodiment is a Double-Edged Sword in Human-Robot Interaction: Ascribed vs. Intrinsic Intentionality", Proc. Workshop on Cognition: A Bridge between Robotics and Interaction, ACM/IEEE Human Robot Interaction Conference (HRI 2015), Portland, USA, March 2, pp. 9-10, 2015.

63. Vernon, D. The Challenges of Reconciling Utility with Autonomy: a Roadmap and Architecture for the Development of Cognition in Humanoid Robots, Invited Paper, Proc. Int. Conf. on Biologically-Inspired Cognitive Architectures, A. V. Samsonovich and K. R. Johannsdottir (Eds.), IOS Press, 412-418, 2011.

64. Basaeed, E., Al-Mualla, M., and Vernon, D. "Exploiting Foveation in User-centred Image Fusion", Proc. IEEE GCC Conference and Exhibition, Dubai, 2011.

65. Abdulla, R., Hamila, R., and Vernon, D. "Selective Visual Attention for Urban Search and Rescue Robots", Proc. 12th Int. Conference on Climbing and Walking Robots, 9-11 September, Istanbul, Turkey, 2009.

66. Kulaib, A., Al-Mualla, M., and Vernon, D. "2D Binaural Sound Localization for Urban Search and Rescue Robotics", Proc. 12th Int. Conference on Climbing and Walking Robots, 9-11 September, Istanbul, Turkey, 2009.

67. Metta, G., Sandini, G, Vernon, D., Natale, L., Nori, F. "The iCub humanoid robot: an open platform for research in embodied cognition", Proceedings of the Performance Metrics for Intelligent Systems Workshop (PerMIS), R. Madhavan and E. Messina (eds.), NIST Special Publication 1090, pp. 50-56, August 2008.

68. Vernon, D., Sandini, G, and Metta, G. "The iCub Cognitive Architecture: Interactive Development in a Humanoid Robot", Proceedings of IEEE International Conference on Development and Learning (ICDL), July 2007.

69. Metta, G., Vernon, D., and Sandini, G. "The RobotCub Approach to the Development of Cognition: Implications of Emergent Systems for a Common Research Agenda in Epigenetic Robotics", Proceedings of the Fifth International Workshop on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems (EpiRob2005), Berthouze, L., Kaplan, F., Kozima, H., Yano, H., Konczak, J., Metta, G., Nadel, J., Sandini, G., Stojanov, G. and Balkenius, C. (Eds.) Lund University Cognitive Studies, 123. ISBN 91-974741-4-2, pp. 111-115, 2005

70. Metta, G., Sandini, G., Vernon, D., Caldwell, D., Tsagarakis, N., Beira, R., Santos-Victor, J., Ijspeert, A, Righetti, L, Cappiello, G., Stellin, G., and Becchi, F. The RobotCub project - an open framework for research in embodied cognition, Humanoids Workshop, IEEE –RAS International Conference on Humanoid Robots, December, 2005.

71. Sandini, G., Metta, G., and Vernon, D. "RobotCub: An Open Research Initiative in Embodied Cognition", Proceedings of the Third International Conference on Development and Learning (ICDL '04), 2004.

72. Sandini, G., Metta, G., and Vernon, D. "RobotCub: An Open Framework for Research in Embodied Cognition", Proceedings of IEEE-RAS/RSJ International Conference on Humanoid Robots (Humanoids 2004), pp. 13-32, 2004.

73. Vernon, D. "An Optical Device for Computation of Binocular Stereo Disparity with a Single Static Camera", Proceedings OPTO-Ireland 2002, SPIE Vol. 4877, pp. 38-46, 2002.

74. Lysaght, T., Vernon, D., and Timoney, J. "Subgraph Isomorphism Applied to Feature Correspondence in Timbre Morphing", Proceedings of the Irish Signals and Systems Conference, A. Fagan and O. Feely (Eds.), pp. 250-257, 2000.

75. Lysaght, T. and Vernon, D. "Timbre Morphing of Synthesised Transients using the Wigner Time-Frequency Distribution", Proceedings Anais do XIX Congresso Nacional da Sociedade Brasileirade Computacao, Vol. 3 SBCM Simposio Brasileiro de Computacao e Musica, pp 1-7, PUC-Rio, Rio De Janeiro, Brazil, 1999.

76. McDonald, J. and Vernon, D. "A New Hough Transform for the Detection of Arbitrary 3-Dimensional Objects", Proceedings of the Optical Engineering Society of Ireland & Irish Machine Vision and Image Processing Joint Conference, National University of Ireland, Maynooth, pp. 243-255, 1998.

77. Vernon, D., Doemens, G., and Murphy, N. "Reconstruction of High-Resolution Images from Asymmetrically-Sampled Sensor Data", Proceedings of the Optical Engineering Society of Ireland & Irish Machine Vision and Image Processing Joint Conference, National University of Ireland, Maynooth, pp. 34-50, 1998.

78. Trenaman, A. and Vernon, D. "Development of Generic Algorithms for Random Access Machine Vision", Proceedings of the Optical Engineering Society of Ireland & Irish Machine Vision and Image Processing Joint Conference, National University of Ireland, Maynooth, pp. 18-33, 1998.

79. Butler, P. O'Brion, E. and Vernon, D. "A Hand-Activated White-Light Profilometry System to Effect the Automatic Recovery of Facial Shape", Proceedings of the Optical Engineering Society of Ireland & Irish Machine Vision and Image Processing Joint Conference, National University of Ireland, Maynooth, pp. 85-101, 1998.

80. Vernon, D. "Decoupling Fourier Components of Dynamic Image Sequences: A Theory of Signal Separation, Image Segmentation, and Optical Flow Estimation", Proceedings of the European Conference on Computer Vision ECCV `98, Springer Verlag, pp. 69-85, 1998.

81. O'Broin, E., Early, M. J., Butler, P., and Vernon, D. "A New 3-D Scanning System: A Preliminary Clinical Study", The American Cleft Palate—Cranio Facial Association, 55th Annual Meeting, Baltimore, 24th April, 1998.

82. O'Broin, E. S., Butler, P., Earley, M. J., Lawlor, D. L., and Vernon, D. "An Analysis of Unilateral Cleft Lip Children using a new 3-D Surface Imaging System", Proceeding of the Winter Meeting of the British Association of Plastic Surgeons, Royal College of Surgeons, London, 1998.

83. Tistarelli, M, Grosso, E., Bigün, J, Sacerdoti, C., Santos-Victor, J., Vernon, D. "The VIRSBS Project: Visual Intelligent Recognition for Secure Banking Services", in Alberto Del Bimbo (Ed.): Image Analysis and Processing, 9th International Conference, ICIAP '97, Florence, Italy, September 17-19, Lecture Notes in Computer Science 1311 Springer 1997, pp. 725-734, 1997.

84. Lysaght, T., O'Donoghue, D. and Vernon, D., "Timbre Morphing using the Wigner Time-Frequency Distribution", Proc. Conference on Computational Models of Creative Cognition, Dublin, Ireland.,1997.

85. Thomas, P. and Vernon, D. "Image Registration by Differential Evolution", Proceedings of the First Irish Machine Vision and Image Processing Conference, IMVIP-97, Magee College, University of Ulster, pp. 221-225, 1997.

86. Vernon, D. "Estimation of Optical Flow using the Fourier Transform", Proceedings of the First Irish Machine Vision and Image Processing Conference, IMVIP-97, Magee College, University of Ulster, pp. 117-123, 1997.

87. Vernon, D. "Removal of Superimposed Reflections from Dynamic Image Sequences", Proceedings of the First Irish Machine Vision and Image Processing Conference, IMVIP-97, Magee College, University of Ulster, pp. 124-130, 1997.

88. Vernon, D. "Phase-Based Computation of Stereo Disparity" Proceedings of the First Irish Machine Vision and Image Processing Conference, IMVIP-97, Magee College, University of Ulster, pp. 216-220, 1997.

89. Vernon, D., Butler, P., and O'Broin, P. "Estimation of a 3-D Surface Profile of a Human Face using a Hand-Actuated White-Light Profilometer", Proceedings of the First Irish Machine Vision and Image Processing Conference, IMVIP-97, Magee College, University of Ulster, pp. 12-19, 1997.

90. Vernon, D., Butler, P., and O'Broin, P. "Edge Localization in a White-Light Profilometer with Sub-Pixel Accuracy", Lasers and Optical Engineering '97, 2nd Annual Conference of the Optical Engineering Society of Ireland, Galway, Ireland, 1997.

91. Vernon, D. "Dilemmas of the Information Age", invited paper, Proc. 'Ireland, Europe, and the Global Information Society: a Conference for Social Scientists', Dublin, 24-25th April, 1997.

92. Vernon, D. "Profligate Practices — The Role of Information Technology in the Debasement of Knowledge", IIS/Special Libraries Branch LAI. Annual Conference, 1997.

93. Butler, P., O'Broin, E, and Vernon, D. "The Recovery of 3-D Facial Shape for Analysis in the Pre- and Post-Operative Phases of Reconstructive Surgery by Hand-Actuated Light-Striping", Proceeding of the First Annual Conference of the Optical Engineering Society of Ireland, pp 60-64, 1996.

94. Trenaman, A., Barry, D., and Vernon, D. "An Analysis of Strategies to Reduce Computational Complexity and Processing Time in Industrial Optical Data Processing and Analysis", Proceeding of the First Annual Conference of the Optical Engineering Society of Ireland, pp. 52-55, 1996.

95. Trenaman, A., Barry, D., and Vernon, D. "Random Access Sensors and their Implications for Optical Data Processing", Proceeding of the First Annual Conference of the Optical Engineering Society of Ireland, pp. 56-59, 1996.

96. Vernon, D. "Decoupling Fourier Frequency Components in Dynamic Image Sequences containing Multiple Moving Objects", Proceeding of the First Annual Conference of the Optical Engineering Society of Ireland, pp 65-68, 1996.

97. Vernon, D. "Segmentation in Dynamic Image Sequences by Isolation of Coherent Wave Profiles", ECCV '96 — Proc. 4th European Conference on Computer Vision, Cambridge, England, Springer Verlag LNCS 1064, pp.293-303, 1996.

98. O'Neill, P., Dawson, K., and Vernon, D. "An Optical Hand Pose Tracking System", Proceedings of the 2nd International Conference Image Communication (Image Com '93), Bordeaux, pp. 175-180, 1993.

99. Furlong, D. and Vernon D. "Reality Paradigms, Perception, and Natural Science – The Relevance of Autopoiesis", Proc. Of the ESPRIT Workshop on Autopoiesis and Perception, Dublin City University, (25 pages), 1992.

100. Vernon, D. and Furlong D. "Relativistic Ontologies, Self-Organization, Autopoiesis, and Artificial Life: A Progression in the Science of the Autonomous. Part I – The Philosophical Foundations", Proc. Of the ESPRIT Workshop on Autopoiesis and Perception, Dublin City University, (15 pages), 1992.

101. Vernon, D. and Furlong D. "Relativistic Ontologies, Self-Organization, Autopoiesis, and Artificial Life: A Progression in the Science of the Autonomous. Part II – A Scientific Development", Proc. Of the ESPRIT Workshop on Autopoiesis and Perception, Dublin City University, (22 pages), 1992.

102. Dawson, K., Flanagan, M., and Vernon, D. "Marr's Framework Revisited", Proc. 9th Israeli Conference on Artificial Intelligence and Computer Vision, pp. 3-12.,1992.

103. Dawson, K. and Vernon, D. "3-D Object Recognition using Passively Sensed Range Data", ECCV '92 — Proc. 2nd European Conference on Computer Vision, Santa Margarita, Italy, pp. 806-819, 1992.

104. Vernon, D. "Advanced Image Understanding and Autonomous Systems" (Invited Lecture), Proc. Of the 17th International Summer School with Conference on Information Technologies and Programming, Sofia, Bulgaria, pp. 54-61, 1992.

105. Dawson, K., Tistarelli, M., and Vernon, D. "On the Usefulness of Optical Flow for Robotic Part Manipulation", Proceeding of the IEEE International Workshop on Intelligent Robots and Systems, Osaka, Vol. 1, pp. 117-122, 1991.

106. Dawson, K. M. and Vernon, D. "Model-based 3-D Object Recognition Using Scalar Transform Descriptors" Proc. SPIE, Vol. 1609, pp. 262-273, 1991.

107. Inouchi, H., McLoughlin, N., and Vernon, D. "A Real Time Simulated Human Vision System Using Connectionist Models Applied to Target Tracking", Proc. IAPR Workshop on Machine Vision Applications, Tokyo, pp. 303-306, 1990.

108. Dawson, K. and Vernon, D. "Implicit Model Matching as an Approach to Three-Dimensional Object Recognition", Proceedings of the ESPRIT Basic Research Action Workshop on "Advanced Matching in Vision and Artificial Intelligence", Munich, June 1990, pp. 59-65, 1990.

109. Vernon, D. "Computer Vision Sensing of Eye Movements", Invited Paper, Proceedings of the 10th Annual Scientific Meeting of the Association of Physical Scientists in Medicine. (23 pages), 1990.

110. Frigato, C., Grosso, E., Sandini, G., Tistarelli, M., and Vernon, D. "Integration of Motion and Stereo", Proceedings of the 5th. Annual ESPRIT Conference, Brussels, Edited by the Commission of the European Communities, Directorate-General Telecommunications, Information Industries and Innovation, North-Holland, Amsterdam, pp.616-627, 1988.

111. Sandini, G., Tistarelli, M., and Vernon, D. "A Pyramid Based Environment for the Development of Computer Vision Applications", IEEE International Workshop on Intelligent Robots and Systems, Tokyo,1988.

112. Healy, P. and Vernon D. "Very Coarse Granularity Parallelism: Implementing 3-D Vision with Transputers", Proc. Image Processing '88, Blenheim Online Ltd., London, pp.229-245, 1988.

113. Kenny, P.A., Dowsett, D.J., Vernon, D., and Ennis, J.T. "Digital Image Registration Techniques applied to Radio-Aerosol Imaging in Nuclear Medicine", presented at a meeting of The Institute of Physical Sciences in Medicine entitled "The Clinical Usefulness of Nuclear Medicine Image Processing", February 9th, 1988.

114. Vernon, D. and Tistarelli, M. "Range Estimation of Parts in Bins using Camera Motion", Proc. SPIE, Vol. 829, pp.258-266, 1987.

115. Sandini, G. and Vernon, D. "Tools for Integration of Perceptual Data", Proc. ESPRIT '86: Results and Achievements, Directorate General XIII (Editors), Elsevier Science Publishers B.V. (North Holland), pp. 855-865, 1986.

116. Kenny, P.A., Dowsett, D.J., Ennis, J.T., and Vernon, D. "Accurate Lung Image Subtraction for V:Q studies: Image Shift Routine Corrects for all Patient Movements", Nuklermedzin: The Proceedings of the 24th Congress of the Society of Nuclear Medicine in Europe, Goslar, Federal Republic of Germany, September 2-5, pp. 25-33, 1986.

117. Vernon, D.. "A Holarchical Approach to Robot Vision", SPIE Vol. 595, Computer Vision for Robots, pp. 151-161, 1985.

118. Kennedy, J., Migliau, A., Morasso, P., Sandini, G., Teulings, H.L., and Vernon, D. "Image and Movement Understanding", Proceedings of the ESPRIT Technical Week II, Brussels, (14 pages), 1985.

119. Vernon. D. "A Hierarchically-Organised Robot Vision System", Proceedings of AI Europa, Wiesbaden, West Germany, (12 pages), 1985.

120. Vernon. D. 1984. "A Robot System for Automatic Wire Crimping", Proceedings of the Technical Program, Internepcon/UK84, Brighton, pp. 416-423.

121. Vernon. D. 1984. "Robot Vision in Automated Electrical Wire Crimping", Proceedings of the First Image Symposium, Biarritz, pp. 863-868.

Peer-Reviewed Workshop Papers

122. Vernon, D. "Culturally Competent Social Robotics for Africa: A Case for Diversity, Equity, and Inclusion in HRI", 2nd Workshop on Equity and Diversity in Design, Application, Methods, and Community at the Human-Robot Interaction conference (HRI DEI 2023), March 13.

Book Chapters

123. Cangelosi, A. and Vernon, D. "Artificial Intelligence: Powering the Fourth Industrial Revolution", in *Grand Challenges for Society at the Horizon 2050*, C. Hildago (Editor-in-Chief), European Physical Society, in press.

124. Vernon, D. "Cognitive Architectures" in *Cognitive Robotics Handbook*, MIT Press, A. Cangelosi and M. Asada (Eds.), Chapter 10, May 17, 2022.

125. Alupo, C. D., Omeiza, D., and Vernon, D. "Realizing the Potential of AI in Africa: It All Turns on Trust", in *Towards Trustworthy Artificial Intelligence Systems*, M.I. Aldinhas Ferreira (Ed.), Springer, 2022.

126. G. Sandini, A. Sciutti, and D. Vernon, "Cognitive Robotics", in *Encyclopedia of Robotics*, M. Ang, O. Khatib, and B. Siciliano (Eds.), Springer, Berlin, Heidelberg, 2021.

127. Vernon, D. "Ten Unsafe Assumptions When Teaching Topics in Software Engineering", in *Frontiers in Software Engineering Education*, J.-M. Buel *et al.* (Eds.), LNCS 12271, Springer, Chapter 9, 2020.

128. Vernon, D. "The Architect's Dilemmas", in *Cognitive Architectures*, M. I. Aldinhas Ferreira, J. Sequeira, and R. Ventura (eds.), Intelligent Systems, Control and Automation: Science and Engineering, Vol. 94, Springer, 2018.

129. Vernon, D., Thill, S., and Ziemke, T. "The Role of Intention in Cognitive Robotics", in *Toward Robotic Socially Believable Behaving Systems – Volume I*, A. Esposito and L. C. Jain (Eds.), Intelligent Systems Reference Library, Vol. 105, pp. 15-27, Springer, ISBN 978-3-319-31055-8, 2016.

130. Vernon, D. "Cognitive System", *Computer Vision: A Reference Guide*, pp. 100-106, Springer, 2014.

131. Vernon, D. "Cognitive Vision", *Computer Vision: A Reference Guide*, pp. 106-109, Springer, 2014.

132. Vernon, D. "Visual Cognition", *Computer Vision: A Reference Guide*, pp. 860-862, Springer, 2014.

133. Vernon, D., Metta, G., and Sandini, G. "Embodiment in Cognitive Systems: on the Mutual Dependence of Cognition & Robotics", invited chapter in *Embodied Cognitive Systems*, J. Gray and S. Nefti-Meziani (Eds.), Institute of Engineering and Technology (IET), UK. 2010.

134. Sandini, G., Metta, G., and Vernon, D. "The iCub Cognitive Humanoid Robot: An Open-System Research Platform for Enactive Cognition", in *50 Years of AI*, M. Lungarella et al. (Eds.), Festschrift, LNAI 4850, pp. 359–370, Springer-Verlag, Heidelberg. 2007.

135. Vernon, D. and Furlong, D. "Philosophical Foundations of Enactive AI", in *50 Years of AI*, M. Lungarella et al. (Eds.), Festschrift, LNAI 4850, pp. 53–62, Springer-Verlag, Heidelberg, 2007.

136. Vernon, D. "The Space of Cognitive Vision", in *Cognitive Vision Systems: Sampling the Spectrum of Approaches*, H. I. Christensen and H.-H. Nagel (eds.), LNCS, Springer-Verlag, Heidelberg, pp. 7-26, 2006.

137. Dawson, K., Furlong, D., Jones, M., Murphy, N., and Vernon, D. "Computer Vision – Craft, Engineering, and Science' in Vernon, D.(Ed.), *Computer Vision: Craft, Engineering, and Science*, Springer-Verlag, Heidelberg, pp. 89-96, 1994.

138. Dawson, K., Healy, P., and Vernon, D. "VIS Interpretive Control Language (VISICL)", in *Parallel Computer Vision: The VIS à VIS System,* Vernon, D. and Sandini, G. (Eds.), Ellis-Horwood, UK, pp. 214-242, 1992.

139. Sandini, G., Tistarelli, M., and Vernon, D. "Visual Motion and *VIS à VIS*", in *Parallel Computer Vision: The VIS à VIS System,* Vernon, D. and Sandini, G. (Eds.), Ellis-Horwood, UK, pp. 93-114, 1992.

140. Vernon. D. and Sandini, G. "Isolation of Intensity Discontinuities", in *Parallel Computer Vision: The VIS à VIS System,* Vernon, D. and Sandini, G. (Eds.), Ellis-Horwood, UK, pp. 56-81, 1992.

141. Vernon. D. and Sandini, G. "An Overview of *VIS à VIS:* A Virtual Image System for Image Understanding", in *Parallel Computer Vision: The VIS à VIS System,* Vernon, D. and Sandini, G. (Eds.), Ellis-Horwood, UK, pp. 29-55, 1992.

142. Vernon. D. "An Introduction to Computer Vision", in *Parallel Computer Vision: The VIS à VIS System,* Vernon, D. and Sandini, G. (Eds.), Ellis-Horwood, UK, pp. 9-28, 1992.

Other Publications

143. P. Zantou and D. Vernon, "Inclusion Drives Sustainable Development: The Case of Social Robotics for Africa", Poster Presentation, ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies – COMPASS, August 2023.

144. Sandini, G and Vernon, D. "The Hows and Whys of Effective Interdisciplinarity", IEEE AMD Newsletter, Vol. 6, No. 2, pp. 6-7, 2014.

145. Vernon, D. La cognizione nei sistemi artificiali: Cognition in Artificial Systems, Gruppo Nazionale di Bioingegneria, XXV Scuola Annuale, Neuro-Robotic: Neuroscienze e Robotica per lo sviluppo di macchine intelligenti, P. Dario, S. Martinoia, G. Rizzolatti, G. Sandini (eds.), Vol. 25, Pàtron Editore, Bologna, Settembre, pp. 137-155, 2006.

146. Metta, G., Vernon, D., and Sandini, G. "The RobotCub Approach to the Development of Cognition", AISB Quarterly, The Newsletter of the Society for the Study of Artificial Intelligence and Simulation of Behaviour, No. 121, p. 4, 2005.

147. Auer, P. et al. "A Research Roadmap of Cognitive Vision", ECVision – The European Research Network for Cognitive Computer Vision Systems, 50 pages, 2005.

148. Vernon, D. "Cognitive Vision: Past, Present, and Future", Invited Speaker, Proc. Irish Machine Vision and Image Processing Conference, P. J. Morrow and B. W. Scotney (Eds.), September 2003, p. 5., 2003.

149. Vernon, D. 1989. "Computers See the Light", Technology Ireland, Vol. 21, No. 1, pp. 21-23.

150. Kenny, P.A., Vernon, D., Dowsett, D.J., and Ennis, J.T. "Non-Linear Spatial Warping Applied to the Generation of Post-Perfusion Nuclear Medicine Aerosol Ventilation Images", presented to AGM of Assoc. of Physical Scientists in Medicine, September, 1986.