

# Workshop on Culturally Sensitive Social Robotics for All

Abu Dhabi 2023  
**iCAR**

21<sup>st</sup> International Conference on Advanced Robotics  
Abu Dhabi, UAE  
5<sup>th</sup> December 2023

## The Importance of Cultural Competence for Diversity, Equity, and Inclusion

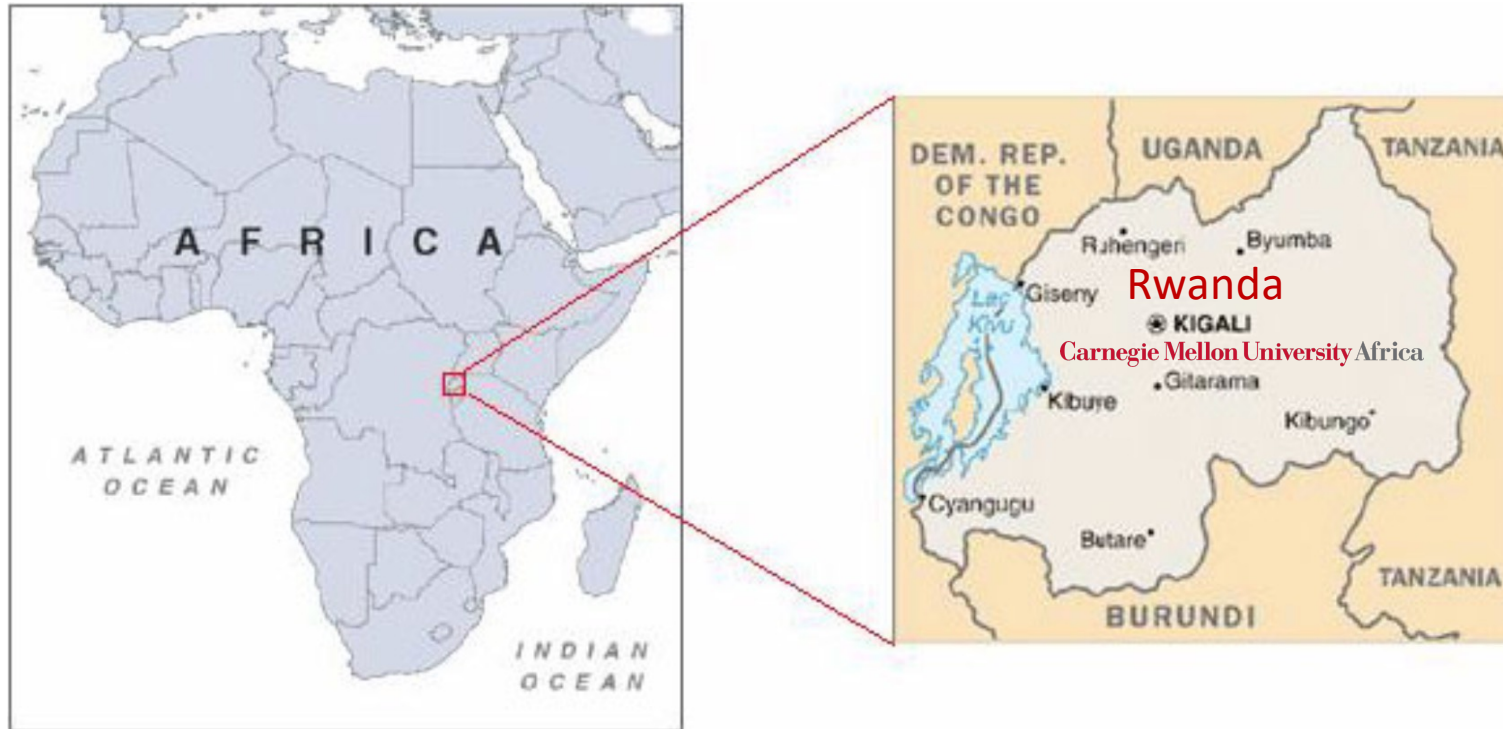
David Vernon

**Carnegie Mellon University Africa**

[www.vernon.eu](http://www.vernon.eu)







# RWANDA ELEVATION MAP

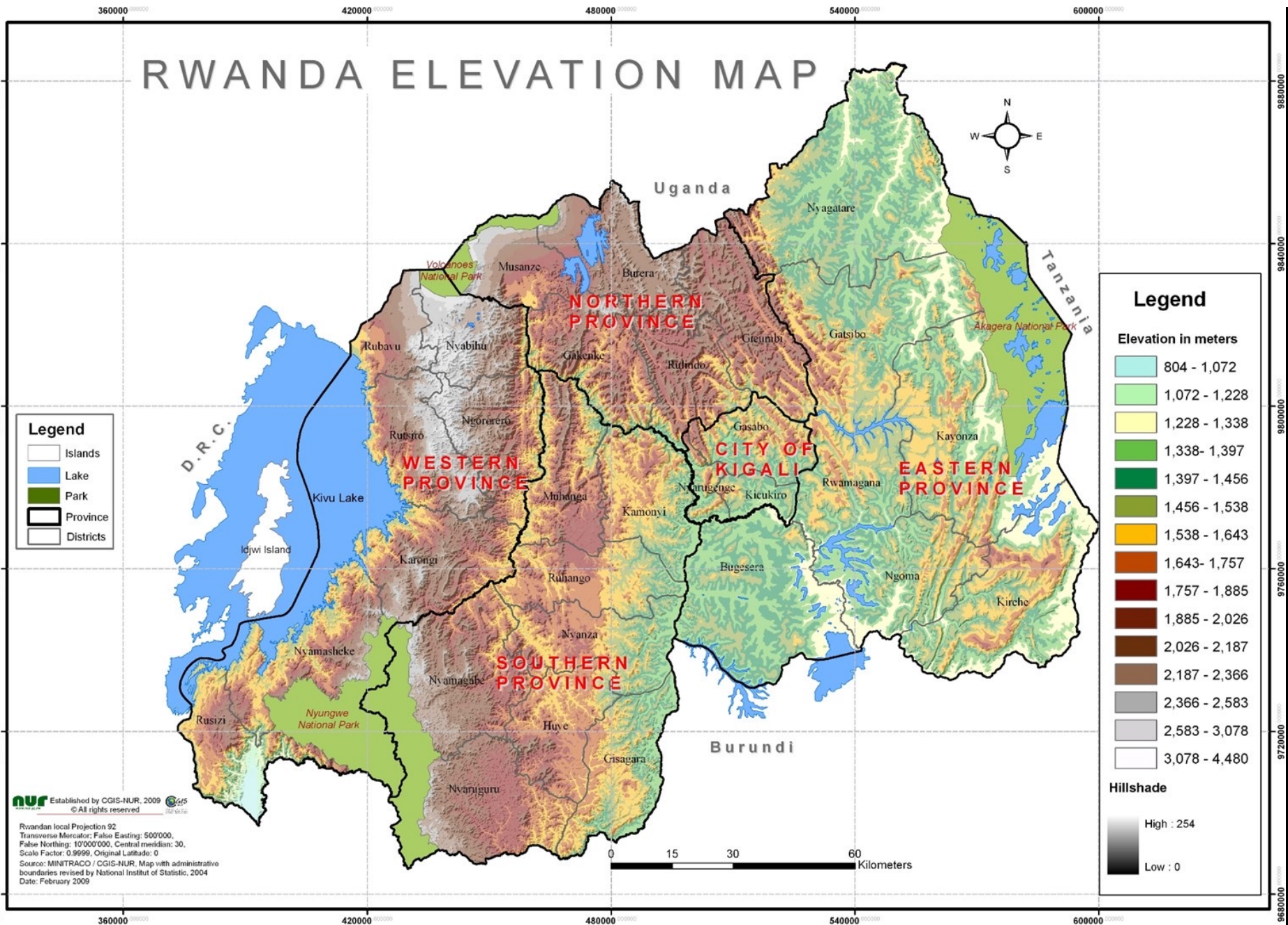






Photo credit: Tallis Woomert



Photo credit: Tallis Woomert



Photo credit: Tallis Woomert



# AI in Africa for Sustainable Economic Development

2020 ACM International Conference on Artificial Intelligence in Finance (ICAIF) Workshop

14th of October 2020 (8am -12:30pm ET)

Artificial intelligence (AI), facilitated by easier data collection and improved computing resources, is shaping the dynamics of many sectors that are closely linked with achieving the Sustainable Development Goals. Many African countries have tremendous opportunities to use AI in a number of key sectors including finance, agriculture, health, infrastructure and food security. However, the lack of expertise and capacity, as well as impacts of the current Covid19 pandemic, pose significant challenges. Despite the extensive promises of AI to transform economies and expedite development, the challenges and adverse impacts need to be studied thoroughly.

REPORT

# The Fourth Industrial Revolution and digitization will transform Africa into a global powerhouse

Njuguna Ndung'u and Landry Signé · Wednesday, January 8, 2020

<https://www.brookings.edu/research/the-fourth-industrial-revolution-and-digitization-will-transform-africa-into-a-global-powerhouse/>

# Centre for the Fourth Industrial Revolution

## C4IR Rwanda



The Centre for the Fourth Industrial Revolution Rwanda (C4IR Rwanda) brings together government, industry, civil society, and academia to co-design, test and refine policy frameworks and governance protocols that maximize the benefits and minimize the risks of 4IR technologies. The Centre is primarily focusing on artificial intelligence and data policy, and seeks to develop multi-stakeholder partnerships to drive innovation and adoption at scale for the benefit of society.

<https://www.weforum.org/centre-for-the-fourth-industrial-revolution/c4ir-rwanda>

## C4IR South Africa



The Centre for the Fourth Industrial Revolution South Africa (C4IR South Africa) supports industry transformation across various sectors, supports government transformation to maintain robust and resilient technology governance protocols and develops and deploys frameworks to support awareness and development of frontier technologies.

<https://www.weforum.org/centre-for-the-fourth-industrial-revolution/c4ir-south-africa>

## AI Saturdays Lagos

Aimed at getting you to kickass in AI!

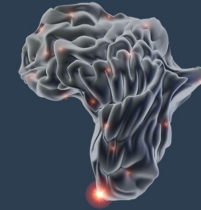


## IBRO-SIMONS COMPUTATIONAL NEUROSCIENCE IMBIZO

#isiCNI2022

The next Imbizo will be held in 2022

Imbizo is a Xhosa word meaning "a gathering to share knowledge". The IBRO-SIMONS Computational Neuroscience Imbizo, or ISI-CNI is exactly that: an opportunity for African and international students to learn about cutting edge research techniques in computational neuroscience.



## AI Optimized for Africa

Our SmartSelfie technology has been trained on over 5 million African faces. With a 99.8% accuracy rate, you can be sure you know who your customers are.

- ✓ Match faces to documents and official ID photos
- ✓ Perform sophisticated liveness and anti-spoof checks
- ✓ Facial detection that is highly accurate for African faces



www.smileidentity.com



### NEW WEBSITE LAUNCHED

February 2020:

We've launched a new website that will make it easier to communicate our mission and keep everyone up to date.

### STRENGTHENING AFRICAN MACHINE LEARNING

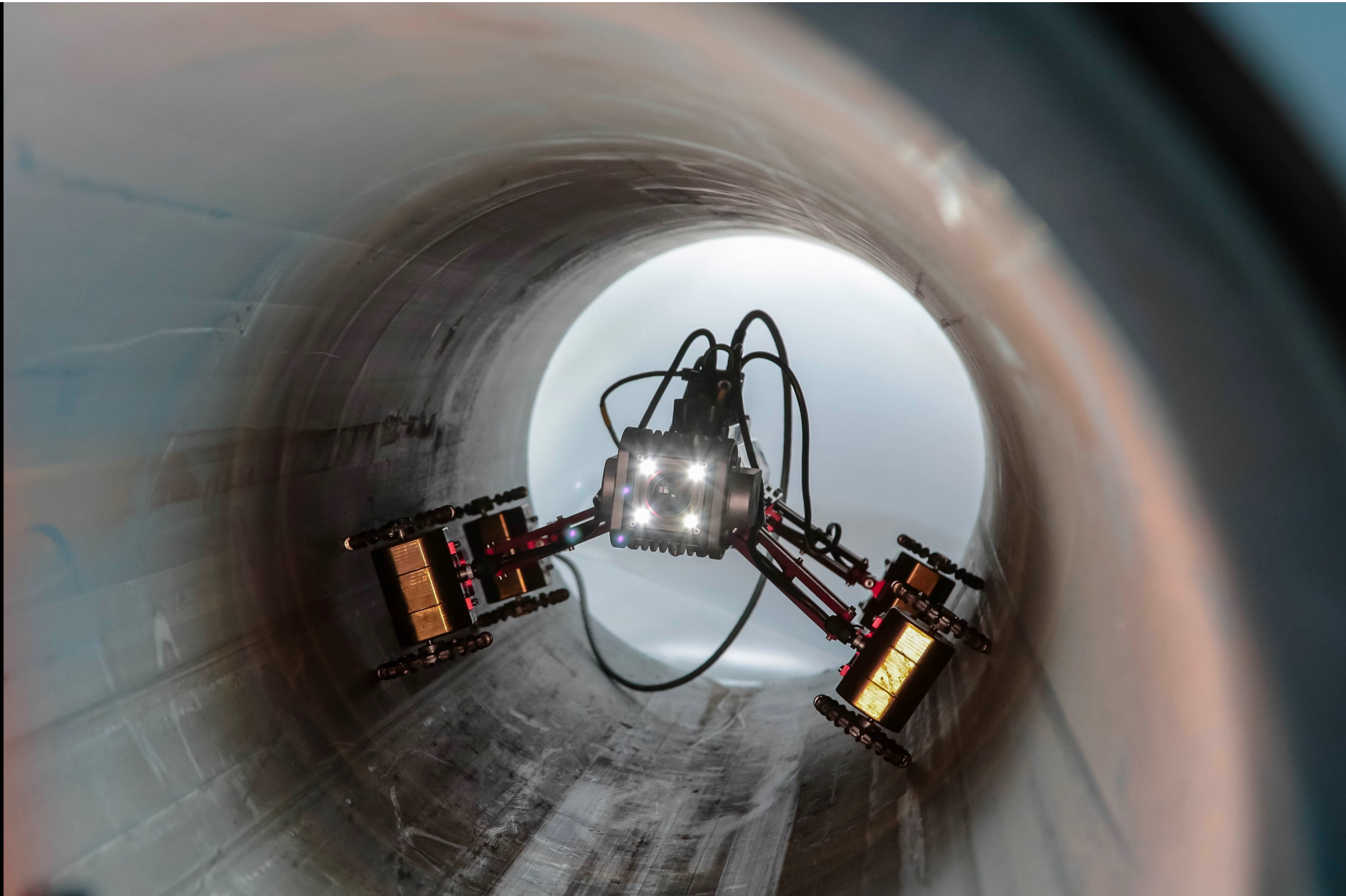
Support Africa's community in AI to be owners and shapers of the advanced in technology and artificial intelligence. We do this by building communities, creating leadership, and recognising excellence in the development of machine learning and artificial intelligence across Africa.

**22 March update:** Due to the seriousness and uncertainty regarding the spread of the virus, we have decided, with great sadness, to cancel all in-person Indaba events for the rest of the year. Read our blog and check back for updates. The next Indaba will take place in 2021 the Institut Supérieur des Arts Multimédia de la Manouba (in English, Higher Institute of Multimedia Arts of Mannouba), Tunisia

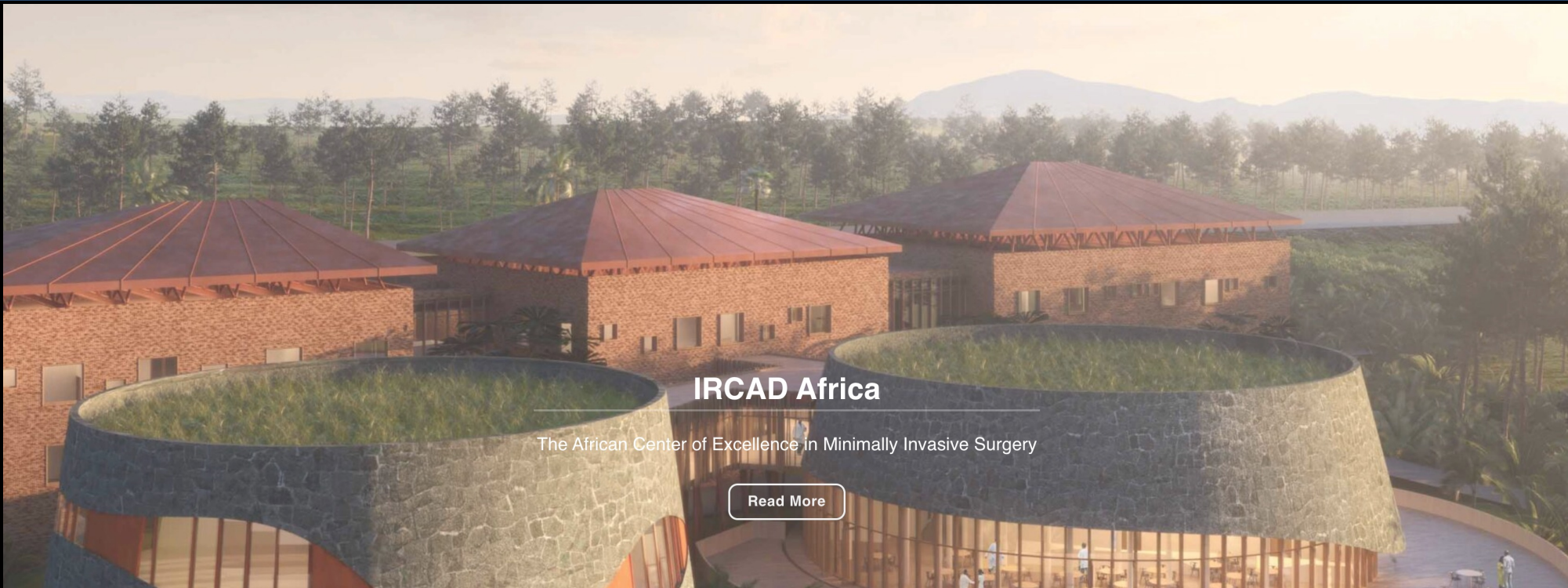
**Upcoming:**  
**DSA Kampala 2020**  
July 24<sup>th</sup> - July 31<sup>st</sup> 2020  
Kampala, Uganda

**Previous:**  
**DSA Accra 2019**  
October 21<sup>st</sup> - October 28<sup>th</sup> 2019  
Accra, Ghana

**Data Science Africa**  
Since 2013



<https://www.ryonic.io/products/pipeline-inspection-crawlers/rmis-m8/>



## IRCAD Africa

The African Center of Excellence in Minimally Invasive Surgery

[Read More](#)

### The Institutes worldwide

Since its creation in 1994, the IRCAD has gained world-renowned fame as a leading research and education institution. Its international success has led to the construction of several institutes across the world.



IRCAD France  
1994



IRCAD Taiwan  
2008



IRCAD Brazil  
2011 & 2017



IRCAD Lebanon  
2019



IRCAD Africa  
2023



IRCAD China  
2024



IRCAD USA  
2025

<https://ircad.space/>

IRCAD has opened a training and R&D centre in Rwanda for minimally-invasive surgery using the latest in computer vision and robotics technology



## Upper GI Robotic Surgery Advanced Course 2022

Register Now

### Course objectives

- To identify the specific robotic platform components, settings, and features required to safely use and operate the robotic surgical platform
- To understand the proper robotic platform in the preoperative set-up for upper GI surgery
- To understand and replicate the critical surgical steps for the safe and effective use of the robotic platform in upper GI surgery
- To define the role of the robot in the current esophageal and gastric surgery practice
- To appreciate the strengths and weaknesses of this emerging field

### Target audience

This course is intended for general surgeons, digestive surgeons, fellows and residents in training

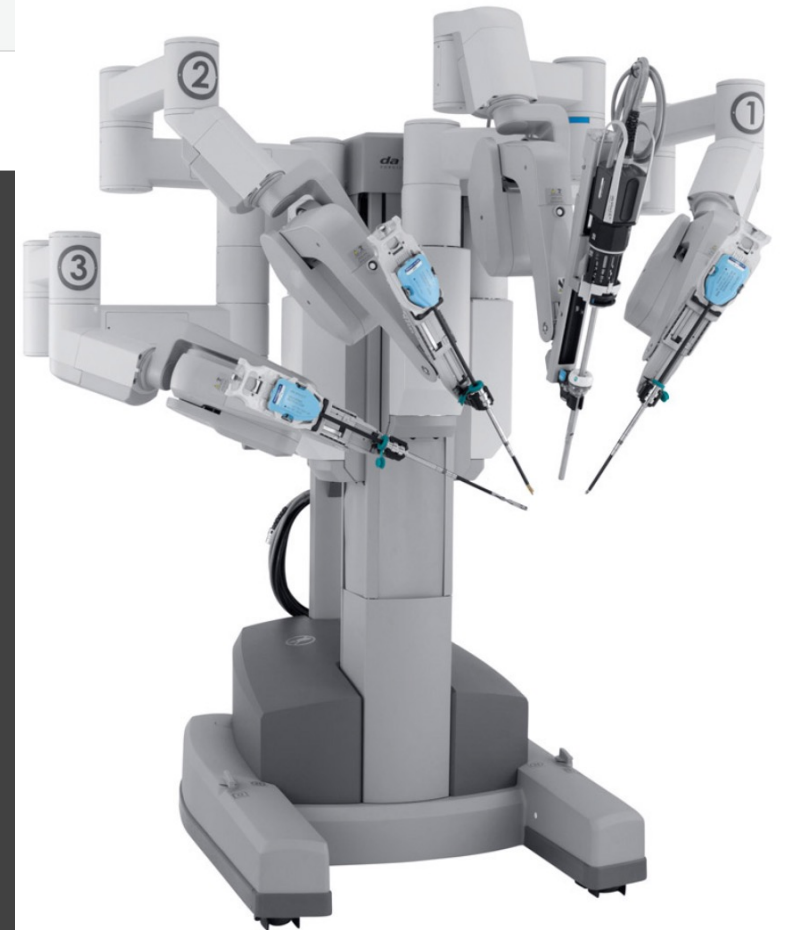
<https://www.ircad.fr/course/upper-gi-robotic-surgery-advanced-course-2022/>

### Educational methods

- Lectures with interactive discussions between participants and Faculty members
- Interactive sessions with operating surgeons during live surgery
- Video-based discussion sessions with Q&A
- Robotic surgery training and practice on simulators and anatomical specimens including the latest generation of **da Vinci® robotic systems**

### Cancellation policy

[View cancellation policy >](#)



<https://robots.ieee.org/robots/davinci/>

IRCAD has opened a training and R&D centre in Rwanda for minimally-invasive surgery using the latest in computer vision and robotics technology

# Keza Education Future Lab



Keza Education Future Lab (KEFL) is a social driven company that supports the achievement of MINEDUC and its affiliated institution REB in providing quality education by improving the use of science and technology among children. KEFL aims to build on successful foundations in the use of ICT for kids by introducing them to robotics and programming at an early age.

## Get in touch

Tel: +250786701376  
Email: [Keza.info@gmail.com](mailto:Keza.info@gmail.com)  
Website: [keza-education.rw](http://keza-education.rw)  
Office Address: Bibare-Ingeri-  
St No 192  
Kimironko, Gasabo,  
Kigali City

**Kids are engineers**

<https://keza-education.rw/>



# The Future of Work Kigali, Rwanda

Africa is the youngest and fastest-growing continent in the world. By 2030, there will be 375 million young people in the job market in Africa. Within a few decades, this demographic boom will push Africa's workforce to more than a billion people, the largest in the world. There is a significant gap between the number of young people seeking work and the employment opportunities available to them. Young people will face challenges finding formal employment and a pathway out of poverty. The theme of this year's PARC is **The Future of Work**. Students are challenged to create solutions for job creation and workforce innovation in Africa.

[Download PARC Letter of Notice \(English & French\)](#)





## PARC COMPETING TEAMS



### TECHS LEAGUE: ARTIFICIAL INTELLIGENCE

**Angola:** Complexo Escolar Privado Internacional  
**Benin:** femCoders  
**Botswana:** EduStore Africa  
**Chad:** Chadian Canadian International School  
**Cote d'Ivoire:** International Bilingual School of Africa  
**Djibouti:** Centre de Leadership et de l'Entrepreneuriat  
**DR Congo:** SpringX  
**Gabon:** Team Gabon  
**Gambia:** Robotics Hub, The Gambia  
**Ghana:** University Basic School, LegonOur  
**Guinea:** STEM Club Guinea  
**Kenya:** Edustore Africa (Toni Focus)

**Lesotho:** Lesotho Science and Mathematics Teachers Association  
**Liberia:** SOAR-METS Afrika4D  
**Mali:** RobotsMali  
**Mauritania:** InnovRim  
**Nigeria:** Graceland International School  
**Rwanda:** Green Hills Academy  
**Senegal:** Cours Sainte Marie de HANN  
**Somalia:** Duggaal Media Pro  
**South Africa:** Sci-Bono  
**Tanzania:** Karume Institute of Science and Technology  
**USA:** The BlkRobot Project  
**Zimbabwe:** Tynwald High School

### STARS LEAGUE: AVATAR TECHNOLOGY

**Angola:** Complexo Escolar Privado Internacional  
**Benin:** femCoders  
**Botswana:** The Clicking Generation  
**Burundi:** Great Lakes Initiatives for Communities Empowerment-Glice Burundi  
**Cameroon:** Africagadget  
**Chad:** WenakLab  
**Congo:** UCAC-ICAM  
**Cote d'Ivoire:** AUTO-HUBUTECH  
**Djibouti:** Centre de Leadership et de l'Entrepreneuriat (CLE)  
**DR Congo:** SpringX  
**Gabon:** Team Gabon  
**Gambia:** Robotics Hub, The Gambia  
**Ghana:** SOS - Hermann Gmeiner International College  
**Guinea:** STEM Club Guinea

**Kenya:** MPESA Foundation Academy  
**Lesotho:** Girls Coding Academy  
**Liberia:** SOAR-METS Afrika4D  
**Madagascar:** ROBOTIAKO  
**Mali:** RobotsMali  
**Mauritania:** Hadina Rimtic  
**Niger:** Google Developer Group Niamey  
**Nigeria:** BredHub (Bliss Robot Education Hub)  
**Rwanda:** Rwanda Coding Academy  
**Senegal:** Senegalease American Bilingual School  
**Sierra Leone:** National Commission for Children  
**South Africa:** SB Decryptors  
**South Sudan:** Team South Sudan Robotic  
**Tanzania:** Apps and Girls  
**Tunisia:** First Skills Club  
**Uganda:** Oysters & Pearls  
**USA:** Neo Engineering League of America  
**Zimbabwe:** Tynwald High School

### MAKERS LEAGUE: AFRICAN YOUTH WORKS

**Angola:** Complexo Escolar Privado Internacional  
**Benin:** femCoders  
**Botswana:** EduStore Africa  
**Cameroon:** Africagadget  
**Chad:** WenakLab  
**Cote d'Ivoire:** AUTO-HUBUTECH  
**Djibouti:** Centre de Leadership et de l'Entrepreneuriat (CLE)  
**DR Congo:** SMARAF EDUK  
**Egypt:** Ismailia STEM high school  
**Gambia:** Robotics Hub, The Gambia  
**Ghana:** PRESEC Robotics And Programming club  
**Kenya:** St. Paul's Gekano boys high school

**Lesotho:** Soofia International School  
**Liberia:** SOAR-METS Afrika4D  
**Madagascar:** ROBOTIAKO  
**Malawi:** Malawi Robotics Foundation  
**Mali:** DoniFab  
**Nigeria:** The Hillside School Abuja  
**Rwanda:** Agahozo Shalom Youth Village  
**Senegal:** Lycee Billes  
**South Africa:** Sci-Bono Discovery Centre  
**South Sudan:** Team South Sudan Robotic  
**Sudan:** NECFSudan chapter  
**Tanzania:** NLab Innovation Academy  
**Uganda:** Mt. St. Mary's College Namagunga  
**Zimbabwe:** Tynwald High School

# All-girls robotics team from Ghana wins World Robofest Championship in the U.S.



ISMAIL AKWEI | Contributor

FULL BIO



May 20, 2019 at 05:00 pm | TECH & INNOVATION

Support Pan-African Journalism

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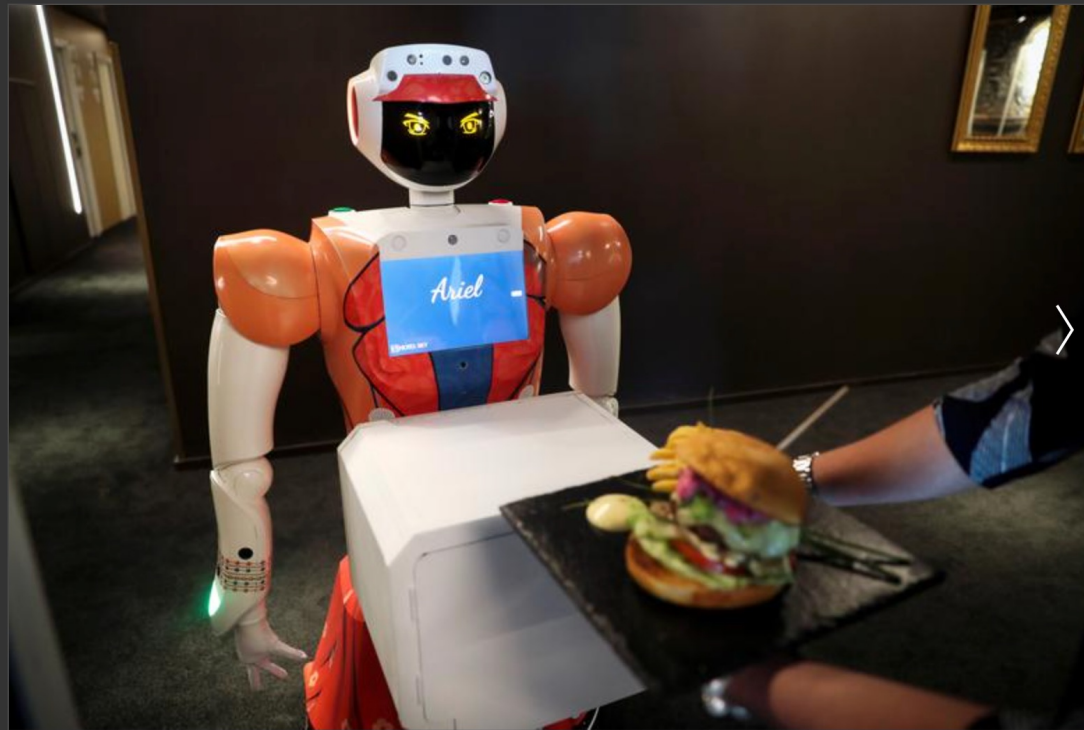
All-girls robotics team from Ghana (Team Acrobot) - Photo: Ghana Robotics Academy Foundation



An Ubtech CRUZR service robot deployed by ZoraBots Africa Ltd. to check the temperature of travelers arriving at Kigali International Airport, Rwanda.



## Robots at reception: South African hotel turns to machines to beat pandemic



1/5



AI-powered robot Ariel delivers room service to a guest at the Hotel Sky, the first in Africa to use automated attendants, in Johannesburg, South Africa, February 9, 2021. Picture taken February 9, 2021. REUTERS/Sumaya Hisham

<https://www.reuters.com/news/picture/robots-at-reception-south-african-hotel-idUSKBN2AF0QX>



## Robotics and Artificial Intelligence in Africa

By David Vernon

Artificial intelligence (AI) provides many opportunities for social and economic empowerment in developing countries. However, when one thinks of Africa, robotics does not spring immediately to mind as the most relevant application of AI, considering that the continent typically has high unemployment and fast-growing populations. Nevertheless, some countries in Africa have embraced robotics on the basis that it has an important role to play in their economic development. In this article, we explore this role and the ways in which Africa can best exploit the opportunities afforded by intelligent automation and robotics. It also highlights strategies to offset the threats posed by global factors, such as premature deindustrialization.

### The Growing Impact of AI in Africa

There is an increasing awareness of the positive impact that AI will have on developing countries, including sub-Saharan Africa, in sectors such as agriculture, health care, and public and financial services [1]. AI has the potential to drive economic growth, development, and democratization, thereby reducing poverty, increasing education, supporting health-care delivery, increasing food production, expanding the capacity of the existing road infrastructure by increasing traffic flows, improving public services, and bettering the

quality of life for people with disabilities [2]. AI can empower workers at all skill levels to be more competitive [3], [4]. Specifically, it can be used to augment and enhance human skills—not to replace or displace humans—and to do so at all levels, enabling average and low-skill workers to fit better in high-performance environments and take on more complex responsibilities.

Africa's biggest economic challenge is to equip large sections of its economy with average workers who are primed to perform tasks far better than most employees are currently managing to do. In South Africa, approximately 31% of employers cannot fill their vacancies [4]. AI will make technology easier to adopt and harness [1], [4]. In the health-care sector, AI helps address the shortage of doctors through telemedicine and access to medical supplies through drone deliveries [5]. In agriculture, AI (including machine learning, remote sensing, and data analytics) has the potential to improve productivity and efficiency at all stages of the value chain, enabling small-holder farmers to increase their income through higher crop yields and greater price control, detect and precisely treat pests and diseases, monitor soil conditions and target fertilizer applications, create virtual cooperatives to aggregate crop yields, broker better prices, and exploit economies of scale. Internet of Things (IoT) platforms may offer cost-effective ways to achieve those benefits [6]. For example, Microsoft is applying its Farmbeats platform [7] in developing countries by lowering the cost associated with

densely deploying sensors, exploiting sparsely distributed sensors and aerial imagery to generate precision maps, and replacing expensive drones with smartphones attached to hand-carried, low-cost, tethered helium balloons [8].

### Premature Deindustrialization

On the downside, factory and call-center work will slow as tasks are replaced by AI-enabled automation, including robots, which will add pressure to unemployment rates that are already high in developing countries, including those in Africa [5]. This will be exacerbated by growing populations, reducing opportunities still further. Africa's population is large and expanding fast: most of its people are young and urban with a median age of 19.5 years, compared to Germany (47.1), the United States (38.1), and China (37.7), and the youth population is set to reach 225 million by 2055 [5]. Kenya, Nigeria, and South Africa, for example, are projected to have approximately 5.5%, 8.5%, and 12.5%, respectively, of their workforce displaced by automation [9]. A report by the Oxford Martin School at the University of Oxford, United Kingdom, and Citigroup, New York, summarizes the situation in Africa in stark terms [10]:

In most of sub-Saharan Africa, the manufacturing share of output has persistently declined over the past 25 years. The share of jobs in manufacturing is even smaller: just over 6% of all jobs. This figure barely changed over the course of the three decades

Digital Object Identifier 10.1109/MRA.2019.2946107  
Date of current version: 11 December 2019





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## AI and Robotics in Africa

+ signifies a recently added item

### Robotics in Africa [\[edit\]](#)

[African Robotics Network \(AFRON\)](#)

[Awarri](#) "Our mission is to enable the development and adoption of advanced AI & Robotics technology on the African continent"

[Robotics in Education in Africa](#) [Ayorkor Korsah](#), Ashesi University, Ghana, Plenary speaker at the 2015 IEEE International Conference on Robotics and Automation

[Award-winning professor ignites passion for STEM learning in Africa](#)

[Robots in Africa. What does this mean for the continent ?](#)

[African countries are importing robots and young people's jobs are at risk](#)

[Research Institute against Digestive Cancer \(IRCAD\)](#)

[IRCAD in the press](#)

[Pan-African Robotics Competition](#)

[Robotics for Kids](#)

[Fundi Bots](#) robotics for kids classes, motivating STEM education generally

[MIT-Africa Robotics Boot Camp](#)

[Humanoid robot Sophia addresses Africa technology summit in Rwanda](#)

[Robofest 2019](#)

[All-girls robotics team from Ghana wins World Robofest Championship in the U.S.](#)

[Robotics and Artificial Intelligence in Africa](#), IEEE Robotics & Automation Magazine, Vol. 26, No. 4, pp. 131-135, December 2019.

[Reflect Robotics](#)

[Robots at reception: South African hotel turns to machines to beat pandemic](#)

[Ryonic Robotics](#)

[Ubtech CRUZR service robot](#) deployed by [ZoraBots Africa Ltd.](#) to check the temperature of travellers arriving at [Kigali International Airport, Rwanda.](#)

[ZoraBots Africa Ltd.](#)

### Robotics Education in Africa [\[edit\]](#)

[Carnegie Mellon University Africa website](#) and [video](#)

[ICRA 2015 - Robotics in Education in Africa](#)

[Keza Education Future Lab](#) for kids aged 3 to 14

[Leapr Labs](#)

[Mtoto Robotics](#) (part for Leapr Labs)

[New Generation Academy](#)

[Creativity Lab](#) STEM education using robots

[The government of Rwanda enters into a partnership](#) with [ZoraBots Africa](#) to promote STEM in Rwandan schools

+ [Robotics and Artificial Intelligence Nigeria](#)

Artificial Intelligence, Robotics, and Machine Learning in Africa

[http://www.vernon.eu/wiki/AI\\_and\\_Robotics\\_in\\_Africa](http://www.vernon.eu/wiki/AI_and_Robotics_in_Africa)

**Lots of inventive activities ...**

But ...

The difference between **Invention** and **Innovation**  
is **Adoption**

Jeremy Rose

Adoption depends on **trust**

# Trust

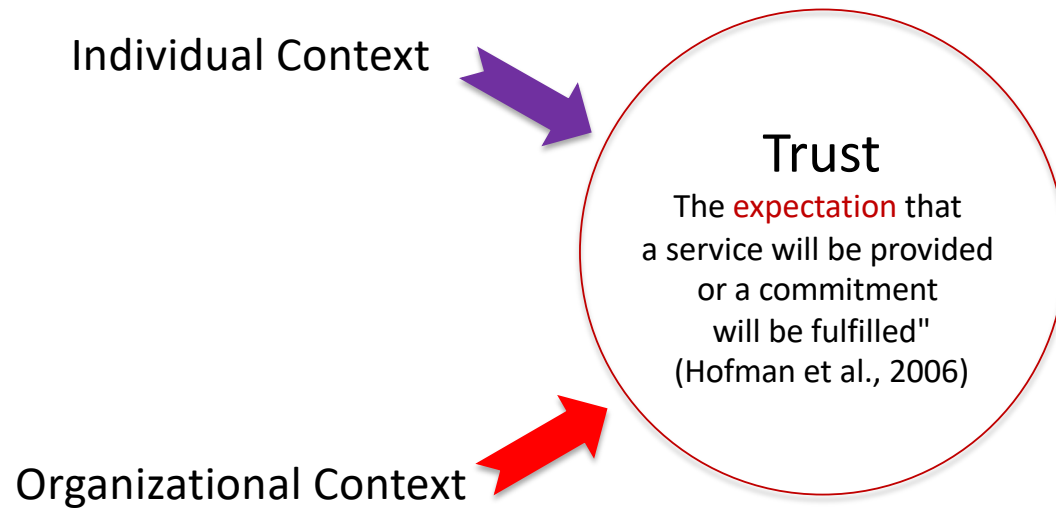
The **expectation** that  
a service will be provided  
or a commitment  
will be fulfilled"  
(Hofman et al., 2006)

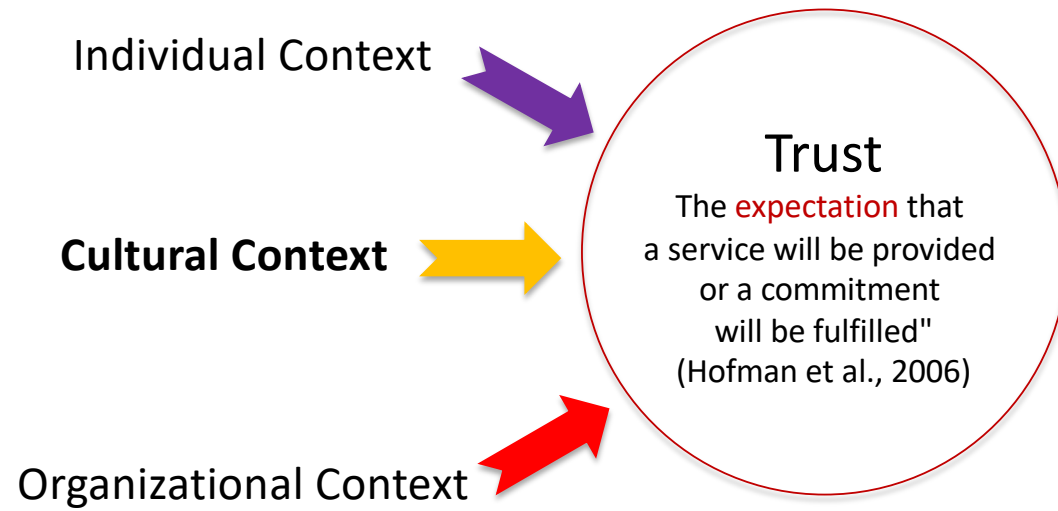
Individual Context



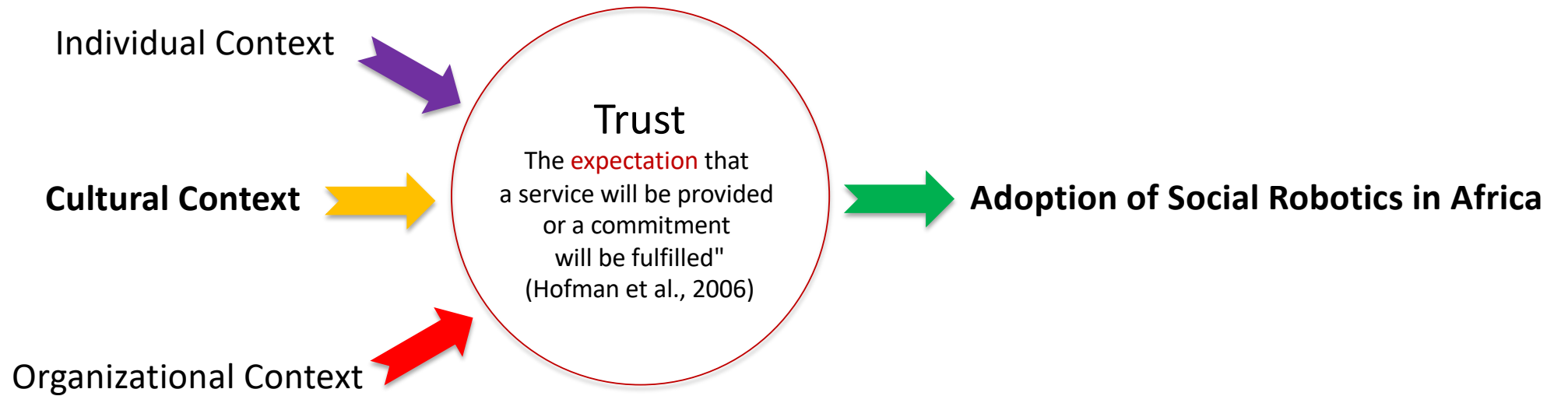
## Trust

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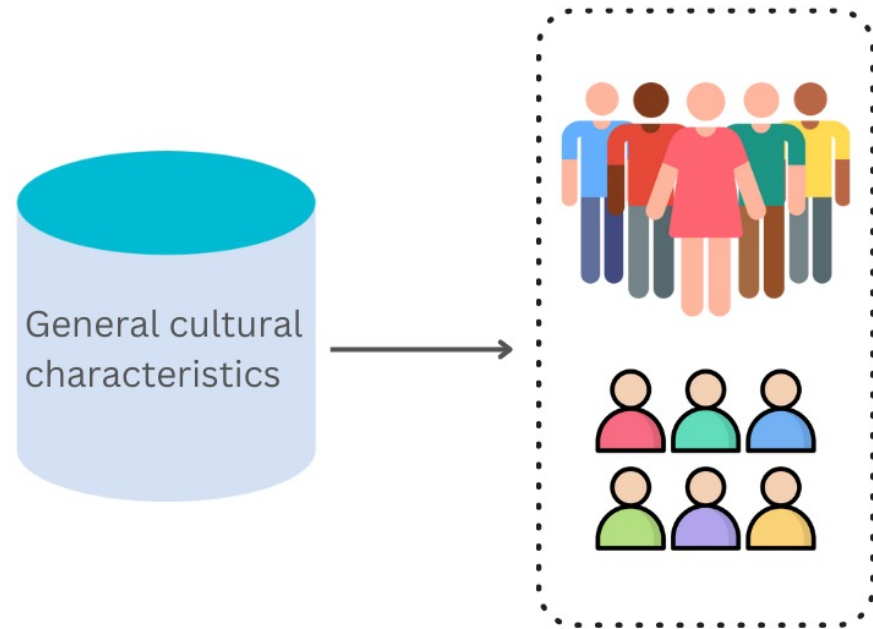




**Adoption hinges on cultural competence**

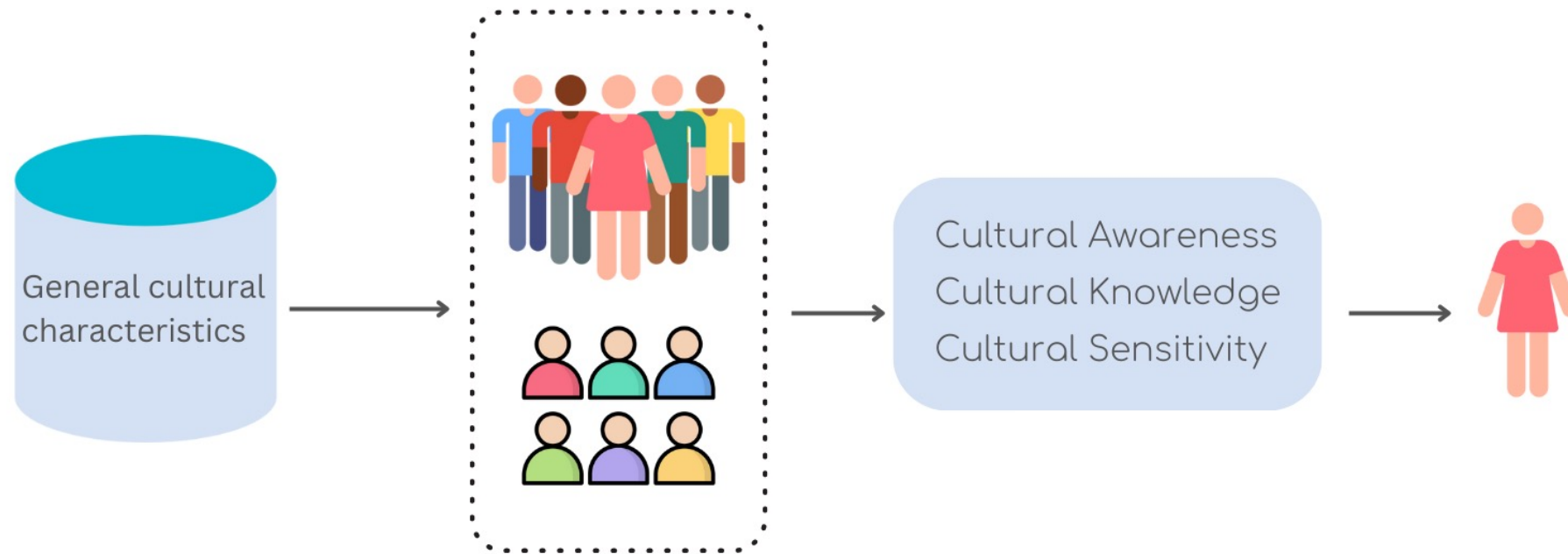


Graphic based based on work by Bruno et al. (2017)



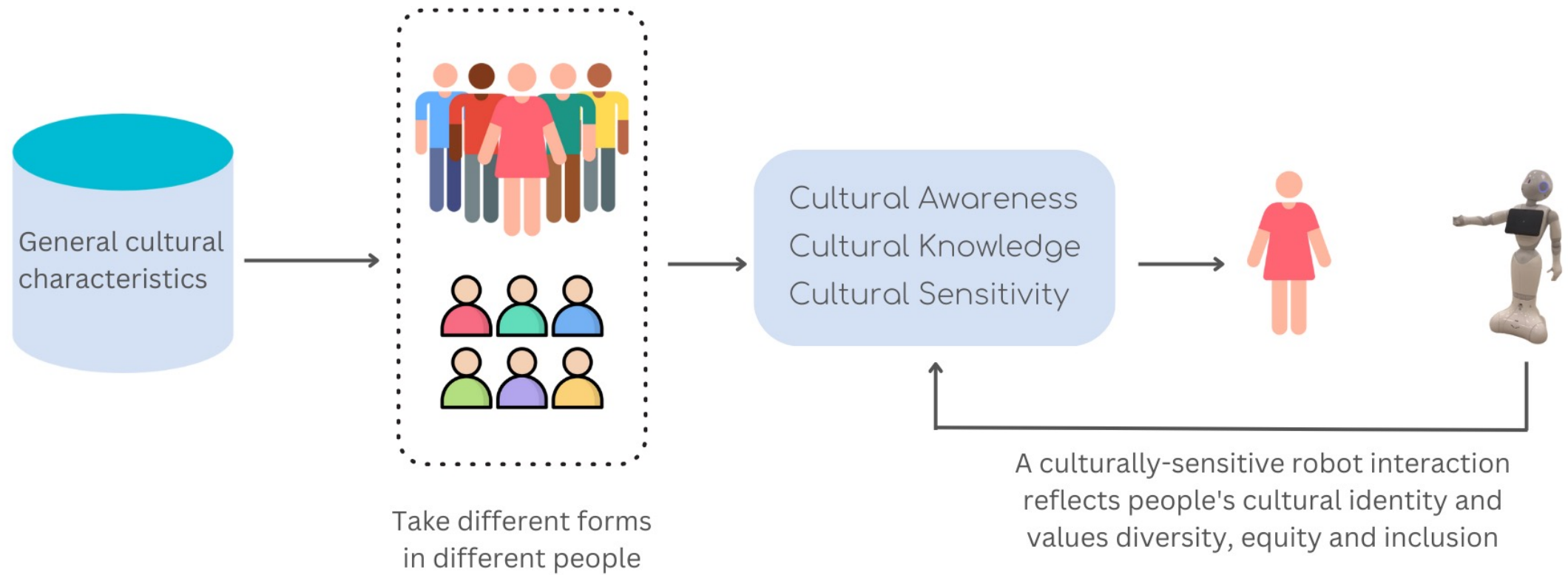
Take different forms  
in different people

Graphic based based on work by Bruno et al. (2017)

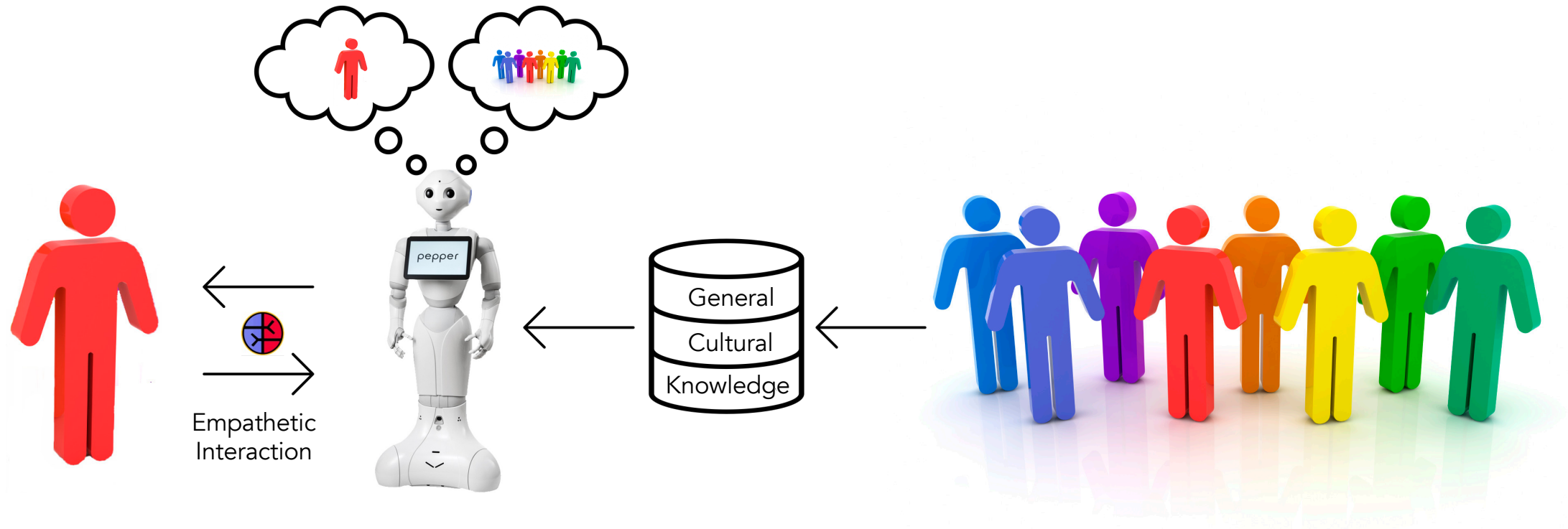


Take different forms  
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Graphic based based on work by Bruno et al. (2017)



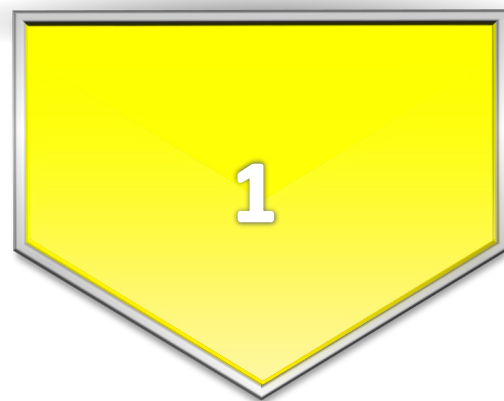
Graphic based based on work by Bruno et al. (2017)



Graphic based based on work by Bruno et al. (2017)

# Culturally Competent Social Robot

{Bruno et al, 2017}



Cultural knowledge representation



# Culturally Competent Social Robot

{Bruno et al, 2017}

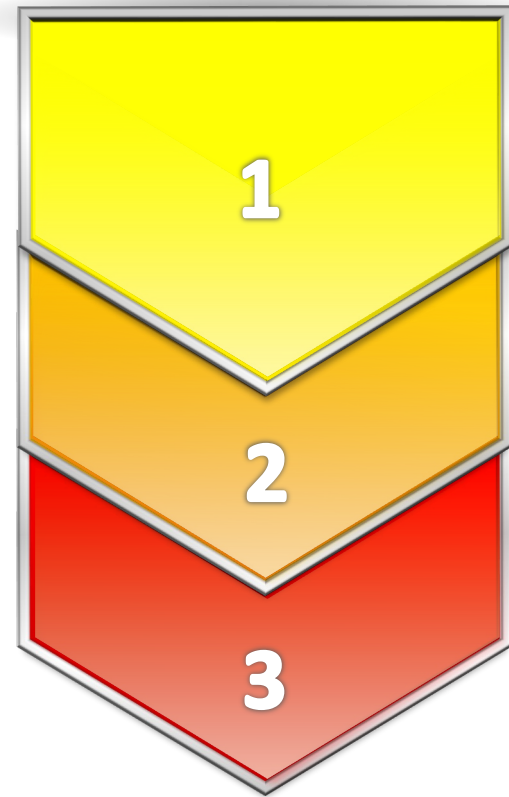


Cultural knowledge representation

Culturally sensitive planning and action execution

# Culturally Competent Social Robot

{Bruno et al, 2017}



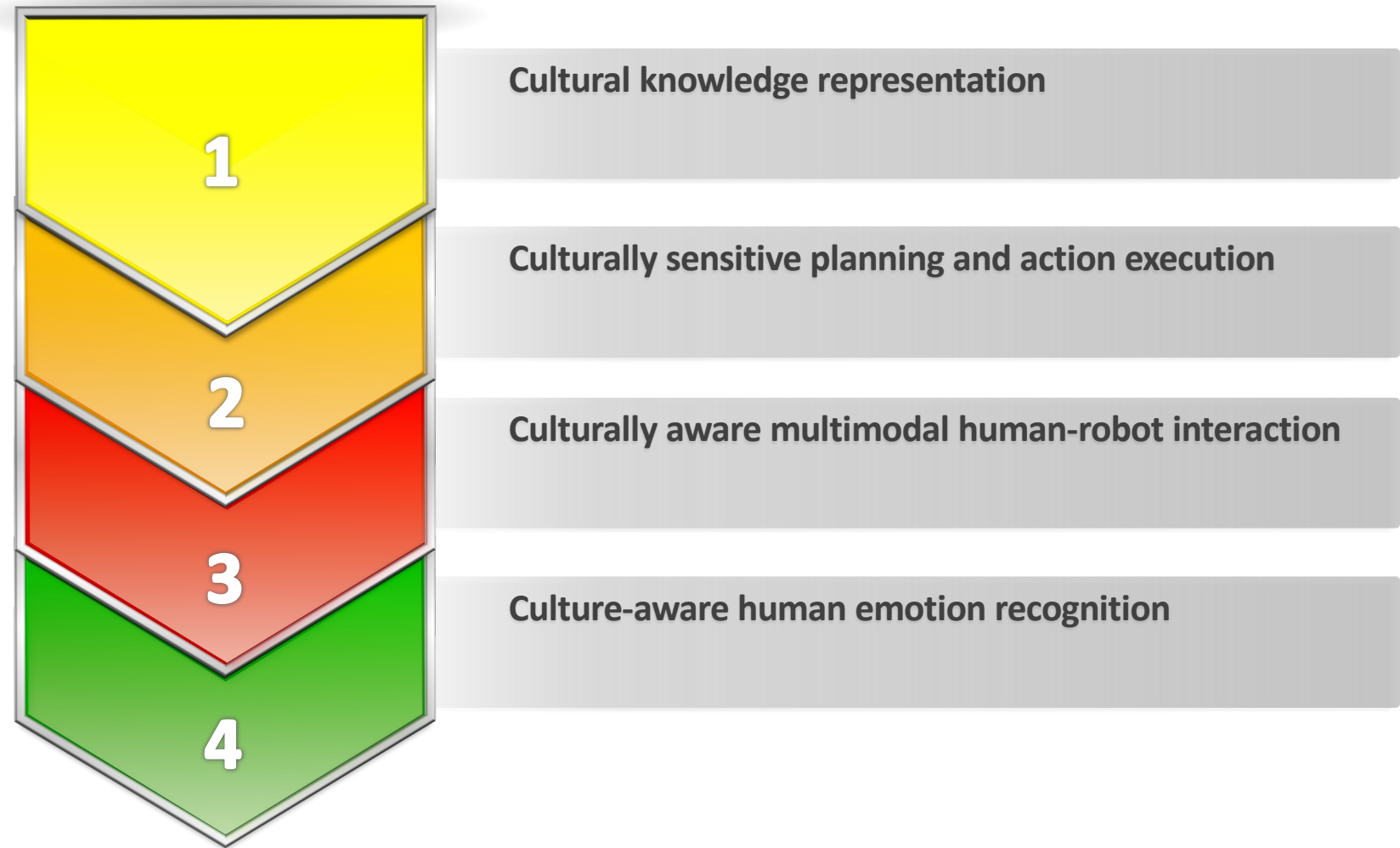
Cultural knowledge representation

Culturally sensitive planning and action execution

Culturally aware multimodal human-robot interaction

# Culturally Competent Social Robot

{Bruno et al, 2017}



# Culturally Competent Social Robot

{Bruno et al, 2017}



**Cultural knowledge representation**

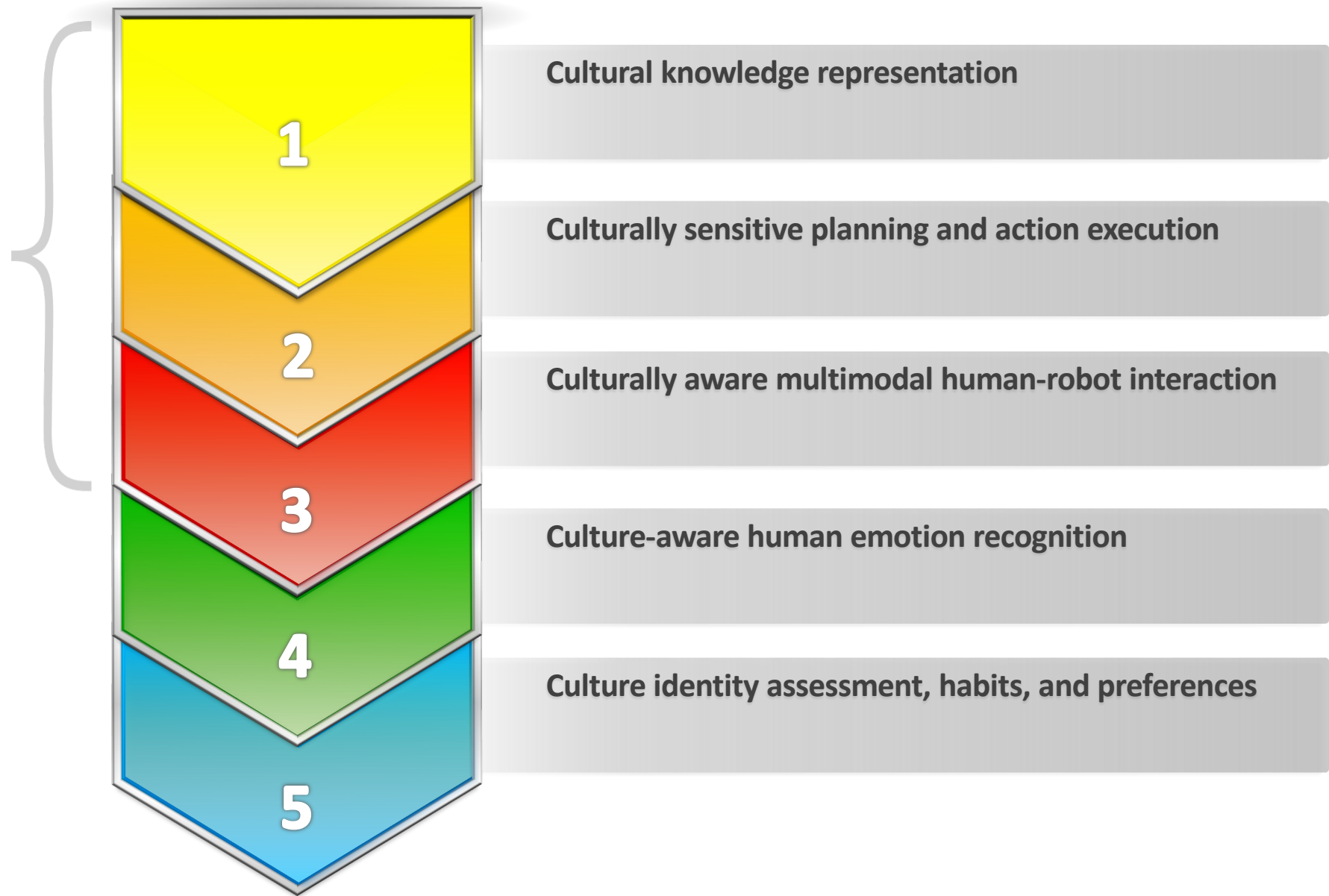
**Culturally sensitive planning and action execution**

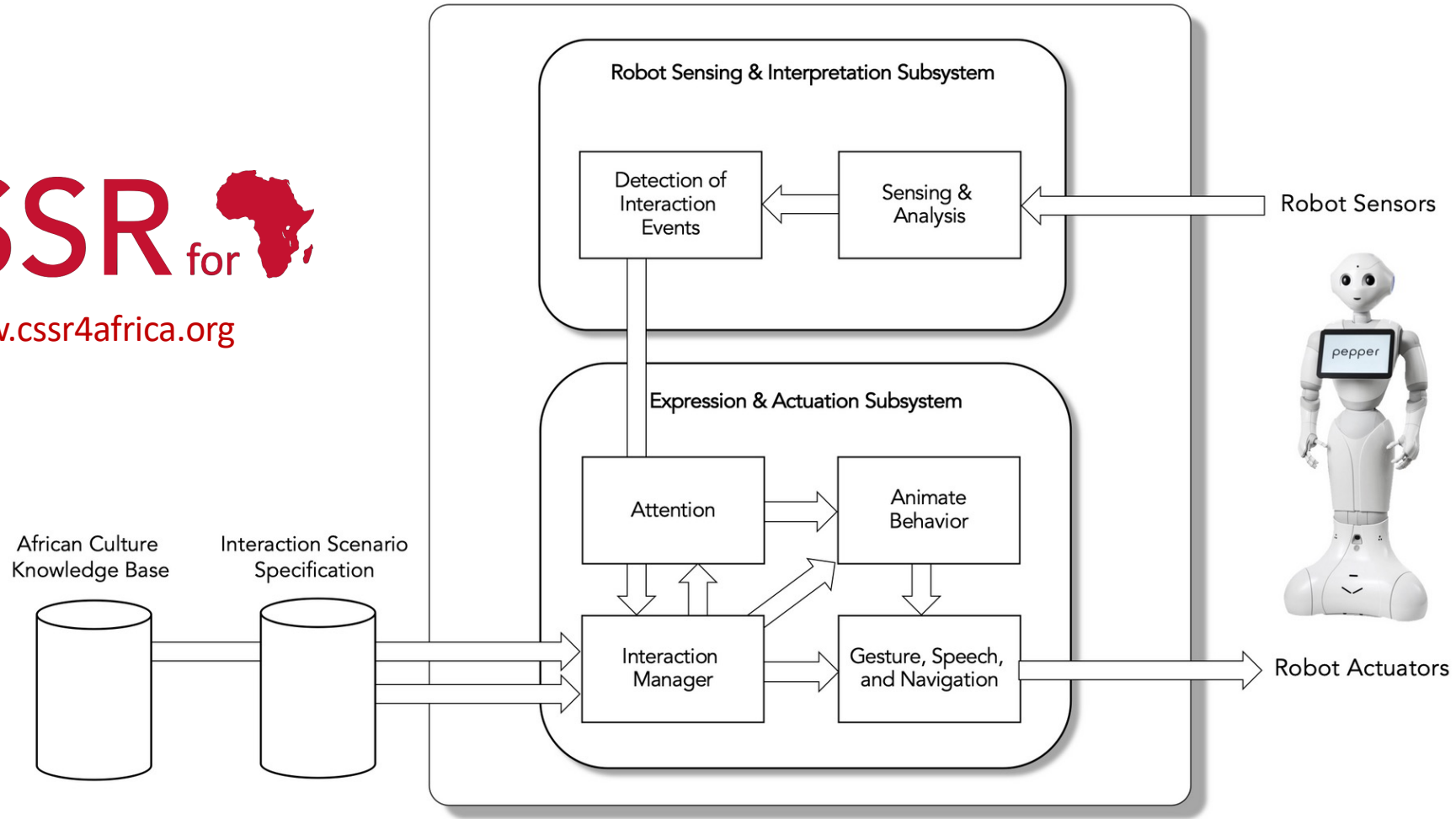
**Culturally aware multimodal human-robot interaction**

**Culture-aware human emotion recognition**

**Culture identity assessment, habits, and preferences**

**Culturally Sensitive  
Social Robot**





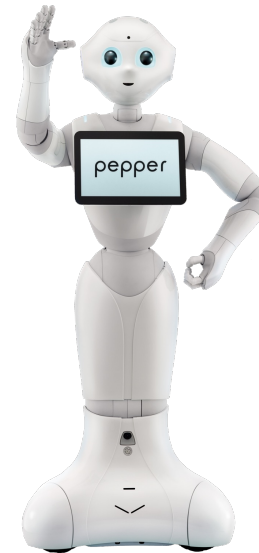
System architecture of the different elements for culturally-sensitive human-robot interaction



| No. | Socio-cultural Norm or Trait                                                                                                           |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| 1   | All interactions should begin with a courteous greeting.                                                                               |
| 2   | The younger interaction partner should enable a greeting to be initiated by an older person.                                           |
| 3   | The younger interaction partner should bow when greeting an older person or when rendering a service.                                  |
| 4   | One should not wave at someone from a distance; one should move towards them to greet them.                                            |
| 5   | To show respect, one should bow slightly and lower gaze when greeting someone older.                                                   |
| 6   | To show respect, one should raise both hands and lower gaze a little when greeting.                                                    |
| 7   | One should suspend work or movements and pay attention when addressed.                                                                 |
| 8   | One should use an open palm of the hand to point to people and objects.                                                                |
| 9   | One should not point an upward facing palm of the hand at someone.                                                                     |
| 10  | One should not use the left hand to point to anything.                                                                                 |
| 11  | One should not use the left hand to hand something to someone.                                                                         |
| 12  | To show respect, one should hand over and accept gifts with two hands and do so from the front, facing the recipient.                  |
| 13  | It is respectful to use local languages and they should be used for verbal interaction when possible.                                  |
| 14  | One should use formal titles when addressing someone.                                                                                  |
| 15  | One should engage in a preamble before getting to the point, as being too forward may be regarded as disrespectful.                    |
| 16  | One should not interrupt or talk over someone when they are speaking.                                                                  |
| 17  | One should not interrupt or talk over someone when they are speaking.                                                                  |
| 18  | One should keep intermittent eye contact; lack of eye contact depicts disrespect as it shows divided attention during the interaction. |
| 19  | One should not make persistent eye contact with an older person.                                                                       |
| 20  | One should not make eye contact when being corrected.                                                                                  |
| 21  | To show respect, one should shake hands with the right hand and use the left arm to support the right forearm when doing so.           |
| 22  | One should not walk far ahead of an older person, unless leading the person (in which case, one should walk slightly to the side).     |
| 23  | One should not walk between two or more people who are conversing; it is considered rude to do so.                                     |
| 24  | An appreciation of rhythmic sound and movement is valued.                                                                              |
| 25  | Behaviours should focus on fostering social connections and relationships; they should not be purely functional.                       |

After {Bruno et al, 2019}

## A Sample of African Culture-specific Knowledge



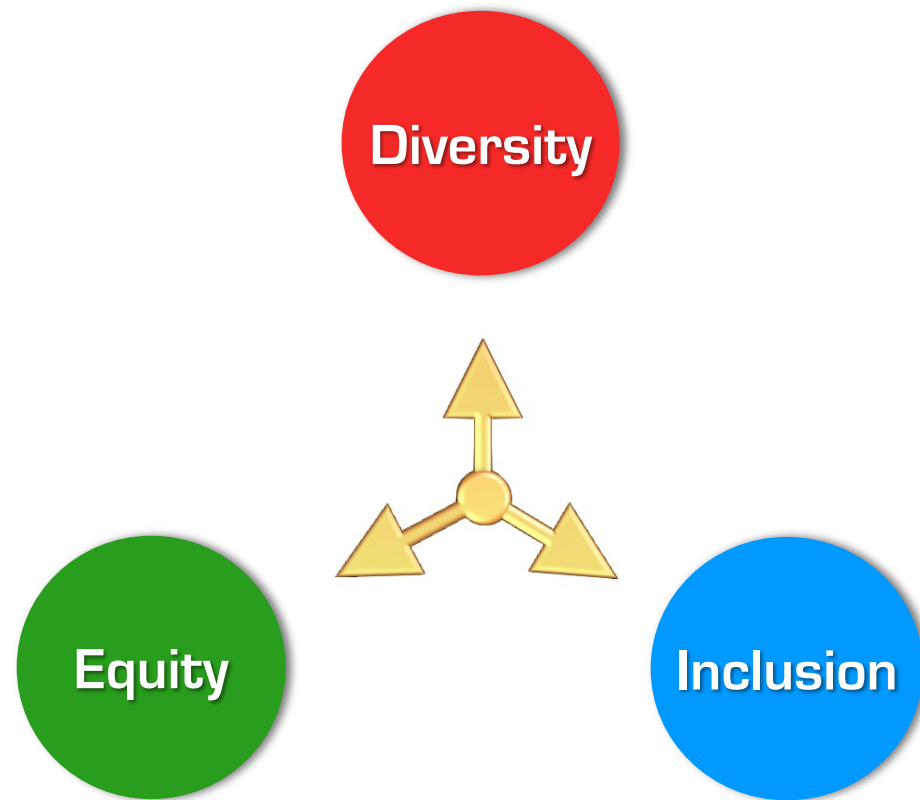
Spatial,  
Non-verbal,  
Verbal  
Interaction

| Design Pattern                             | Culturally Competent Behavior                                                                                                                                                                                                                                    |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Initial Introduction                       | The robot should acknowledge the presence of the person. The robot should initiate an interaction with a slight bow. The robot should greet first and should use a formal greeting. The robot should respect personal and intimate distances during interaction. |
| Reciprocal Turn Taking                     | The robot should respectfully give the initial turn to the human interaction partner. The robot should give priority to older people; it should not interrupt and it should let the other person finish their turn.                                              |
| Didactic Communication                     | Pointing a hand directly at someone is disrespectful. For deictic gestures, the robot should use its left hand. The robot should gesture with an open palm rather than pointing a finger.                                                                        |
| Personal Interests and History             | The robot should avoid trying to share personal history since it will be perceived to be inauthentic. The robot should focus on and highlight its functional usefulness.                                                                                         |
| In Motion Together                         | The robot should explicitly say "Please come along" to remove any ambiguity of intention. The robot should not walk too far ahead when showing the way.                                                                                                          |
| Recovering from Mistakes                   | The robot should apologize profusely. The robot should slightly bow when introducing itself and after it makes a mistake.                                                                                                                                        |
| Physical Intimacy                          | Personal space should be entered only with prior consent. The robot should not pass in between two people that are interacting.                                                                                                                                  |
| Claiming Unfair Treatment or Wrongful Harm | To enhance the perception that the robot is being respectful, the robot should not be aggressive by claiming unfair treatment.                                                                                                                                   |

## A Sample of Africa-centric Design Patterns for Social Robots

After {Kahn et al, 2008}



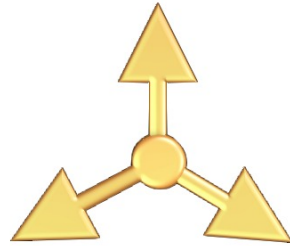


The many **different dimensions** in which people differ & identify

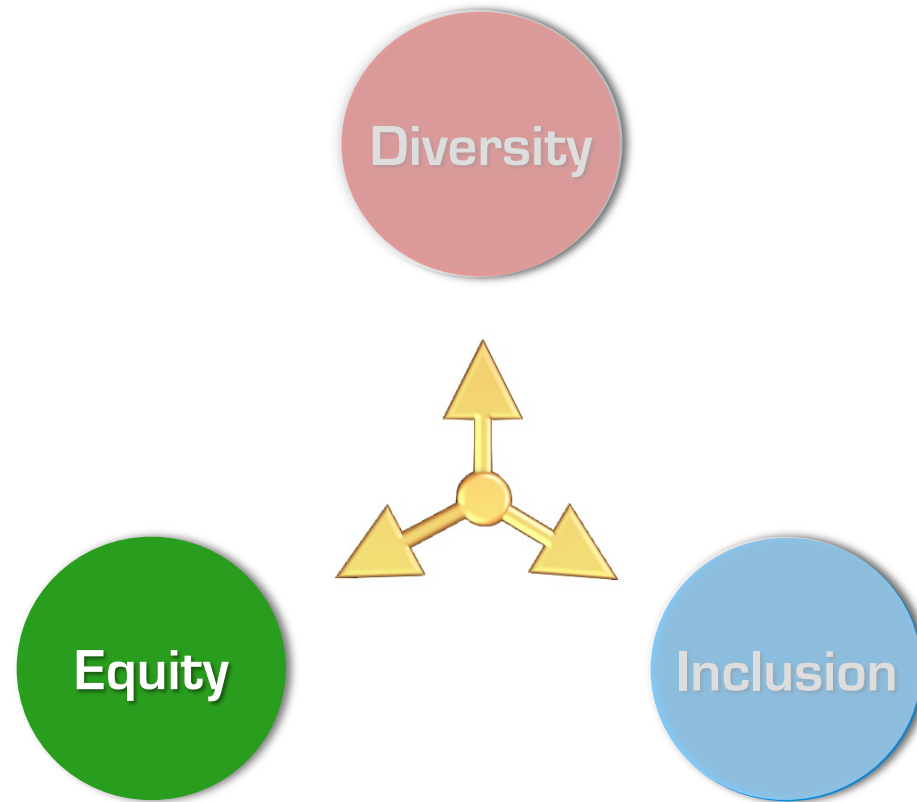
Gender, sexual orientation, race, culture, socio-economic status, traditions, education, age, religious and spiritual beliefs, nationality, ethnicity, experience, physical ability

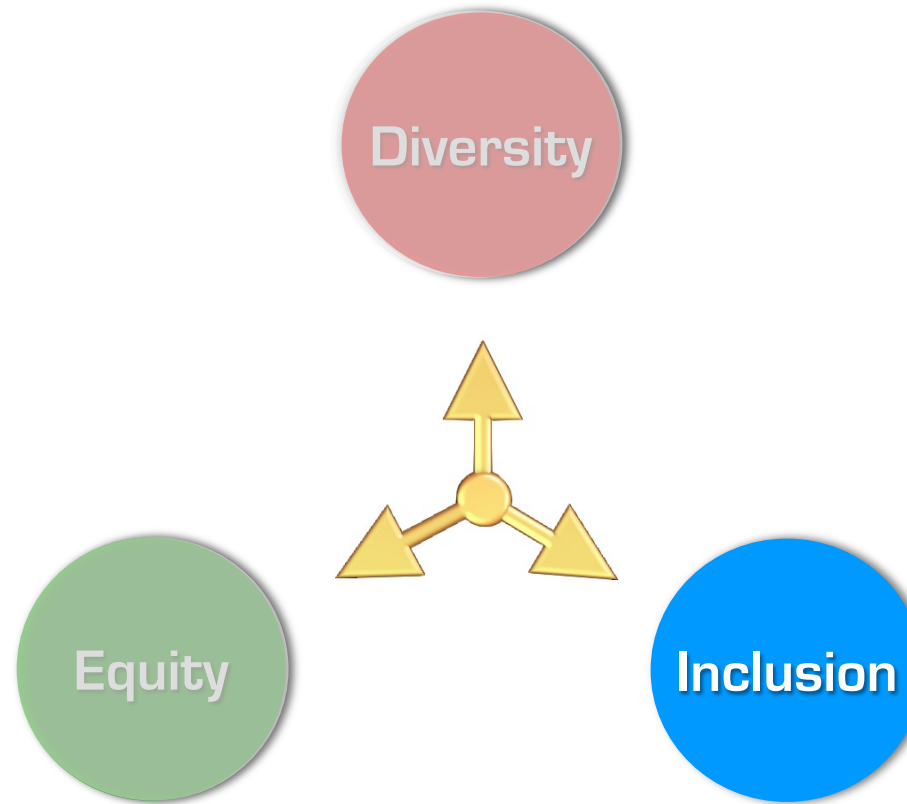


Creates **opportunities** for greater **mutual understanding** of the contribution that a person of each background can make



It is the act of **empowering**,  
the process that leverages  
the **potential latent in**  
**diversity**





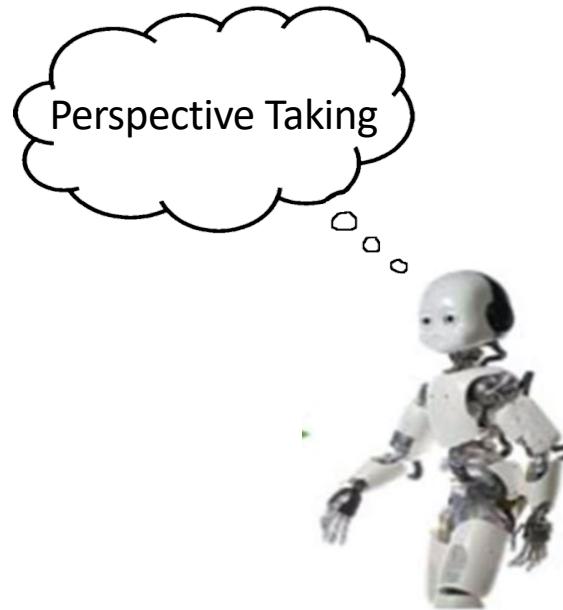
Means that each person feels they **belong** in that environment and that their place is valued

This is the achieved by **empathy**

"The highest form of knowledge is **empathy**,  
for it requires us to suspend our ego and live in another's world"

George Eliot  
Pen name of Mary Ann Evans

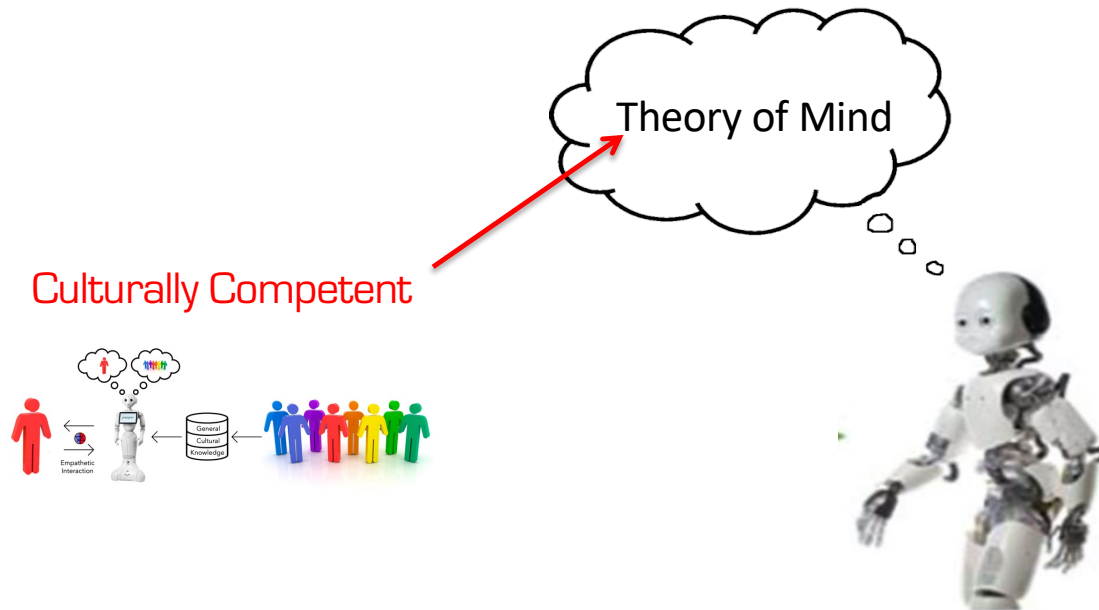
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"The highest form of knowledge is **empathy**,  
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# **Culturally Competent Social Robotics**



# Culturally Competent Social Robotics

Motivated by  
**Polite** Interaction



Cultural Sensitivity

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Cultural Sensitivity



Diversity

# Culturally Competent Social Robotics

Motivated by  
**Polite** Interaction

Cultural Sensitivity

Diversity

**Weak DEI in HRI**



# Culturally Competent Social Robotics

Motivated by  
**Polite** Interaction



**Cultural Sensitivity**



**Diversity**



**Weak DEI in HRI**

Motivated by  
**Respectful** Interaction



**Empathy**



# Culturally Competent Social Robotics

Motivated by  
**Polite** Interaction



Cultural Sensitivity



Diversity



**Weak DEI in HRI**

Motivated by  
**Respectful** Interaction



Empathy



Inclusion



# Culturally Competent Social Robotics

Motivated by  
**Polite** Interaction



Cultural Sensitivity



Diversity



**Weak DEI in HRI**

Motivated by  
**Respectful** Interaction



Empathy



Inclusion



**Strong DEI in HRI**



## DEI is an ethical imperative

DEI in HRI empowers the individuals with whom the robots interact  
by actively valuing the cultural heritage of those individuals

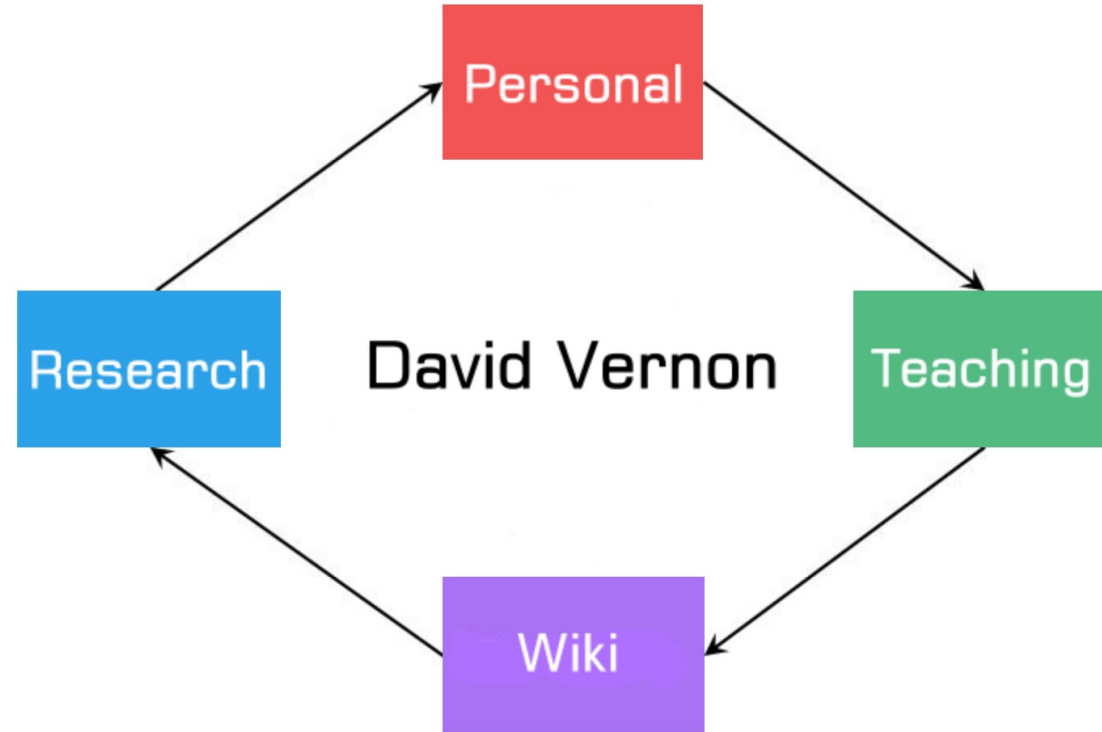




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|                      | Pamely Zantou           |



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# Workshop on Culturally Sensitive Social Robotics for All

Abu Dhabi 2023  
**iCAR**

21<sup>st</sup> International Conference on Advanced Robotics  
Abu Dhabi, UAE  
5<sup>th</sup> December 2023

## The Importance of Cultural Competence for Diversity, Equity, and Inclusion

David Vernon

**Carnegie Mellon University Africa**

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