

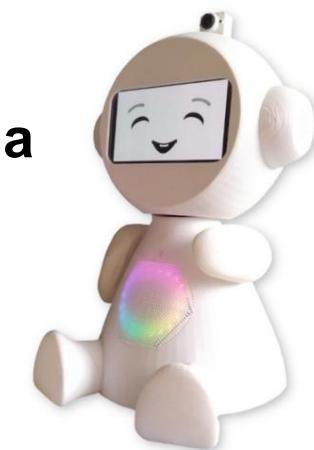


Social Robotics for Education

Débora Muchaluat Saade and Marcelo Rocha

MediaCom Laboratory, e-Health Lab

Institute of Computing
Fluminense Federal University





About the Federal Fluminense University

- Founded in 1960 • MEC

Institutional Concept: 5 (maximum) • 132 Undergraduate

Courses • 106 Postgraduate Courses

(stricto sensu) • 216 Postgraduate Courses (lato sensu) •

More than 76,000 Students • More than 3,400 Professors •

More than 3,700 Administrative

Technicians • 42 Teaching Units

ÿ Institute of Computing - IC



About the Institute of Computing

- Department of Computer Science •

- 66 Professors •

Undergraduate Program:

- ÿ Computer Science

- ÿ 930 students

- Information Systems

- ÿ 620 students

- ÿ Higher Education Technology Course in

- Computer Systems ÿ Blended Learning

- ÿ 2000 students



About the Institute of Computing

- New undergraduate course in Artificial Intelligence and Data Science being created!

- Postgraduate Program in Computer Science (PGC)

Master's Degree

Doctorate

Excellence Program – CAPES Top 12 in Brazil!



Presentation

- **Débora Christina Muchaluat Saade**

- Full Professor at the Institute of Computing/UFF • Coordinator of the Postgraduate Program in Computing • Coordinator of the MídiaCom (2003) and e-Health Lab (2024) Laboratories • **Education:** • Computer Engineer - PUC-Rio • Master's and PhD in Computer Science - PUC-Rio

- **Main areas of activity:**

- Multimedia •
- Computer Networks • Digital Health •
- Socially Assistive Robotics**



Educa 360 Project



- Funding from FAPERJ • Valid from

2022 to 2026



- Research and Innovation in Multisensory Experiences for Education

- Partnership



Educa 360 Project Team



- **Débora Christina Muchaluat Saade** - UFF/Computer Science
 - Coordinator

- Célio V. Neves de Albuquerque - UFF/Computer Science • Cláudia Maria Lima Werner - UFRJ/COPPE • Flávia Coimbra Delicato

- UFF/Computer Science • Cristina Maria Carvalho Delou -
UFF/Education • Diogo Menezes Ferrazani Mattos - UFF/
Engineering • Flávio Luiz Seixas - UFF/Computer Science • Joel A.
Ferreira dos Santos - CEFET/RJ/Computer Science •

- Luciana C. de Castro Salgado** - UFF/Computer Science • Natalia Castro
Fernandes - UFF/Engineering

- postdocs, graduate students, undergraduates and teaching
average

- ÿ **Marcelo Rocha**, PhD student in
Computing

Renan , Pedro Lucas, Pedro Moreira, and João Vitor, undergraduate
students in Computer Science.

ÿ Iasmim Santos - high school student



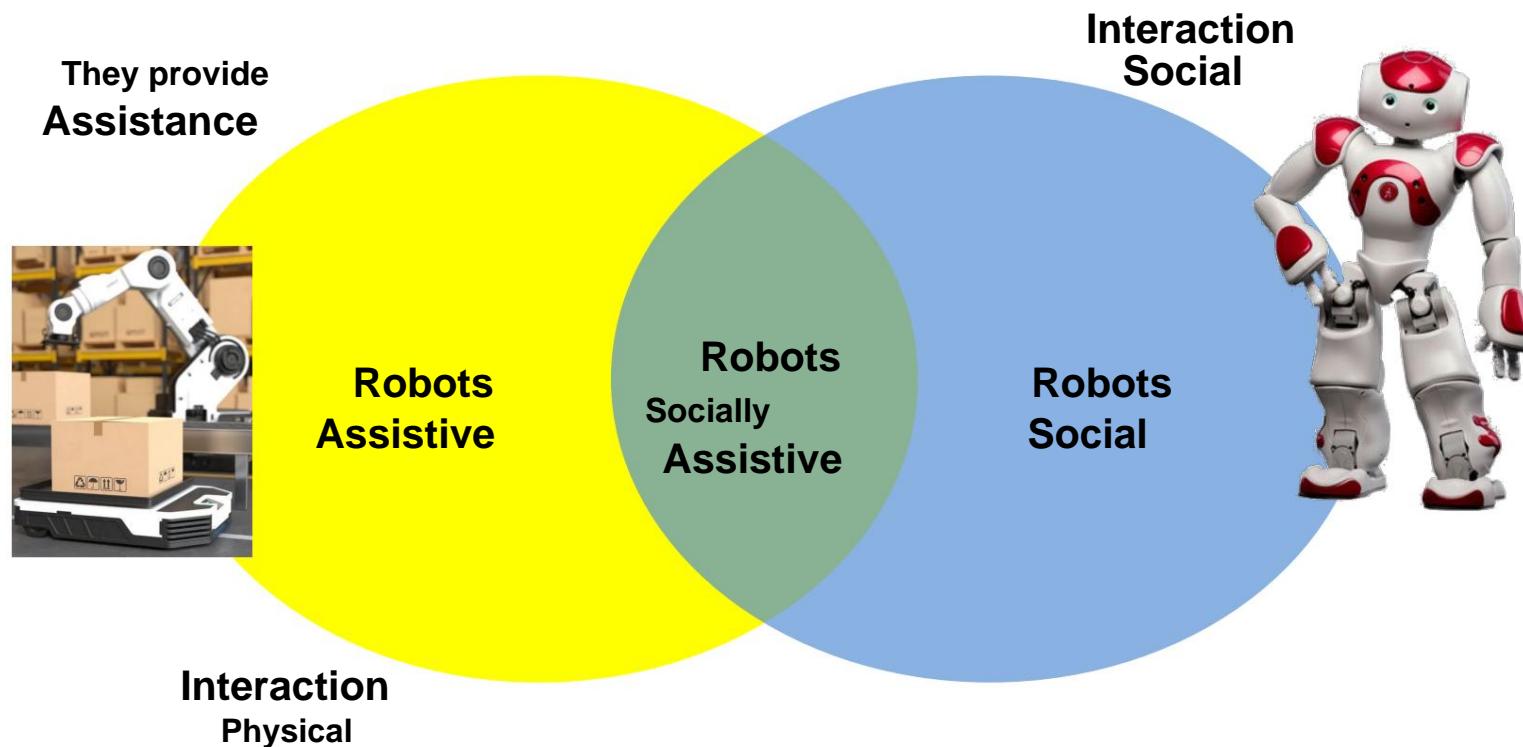
Educa 360 Project



- Our mission:  To bring UFF closer to public schools (partnership with [#IncludeMeninas](#))  To bring technologies developed by UFF to aid learning in schools
- **Using social robotics to promote thinking Computational skills in middle and high school students**



Socially Assistive Robotics

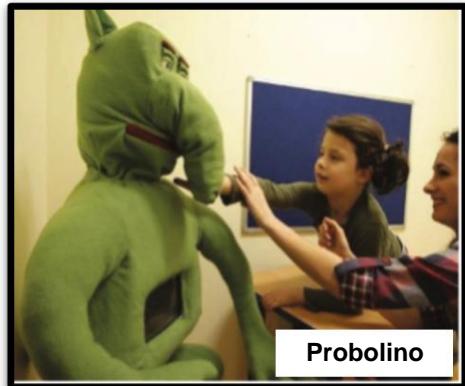


Socially Assistive Robotics

Health

APPLICATIONS

Education



Socially Assistive Robots - SARs



- **Socially Assistive Robots (SARs)** •

Capable of improving the physical and cognitive abilities of humans through stimuli caused by interaction with the robot.

- SARs have been used in health therapies • The **Educa 360 project focuses on applying them to the education of children/young**

EVA Robot



EVA Robot



COMMUNICATION VERBAL

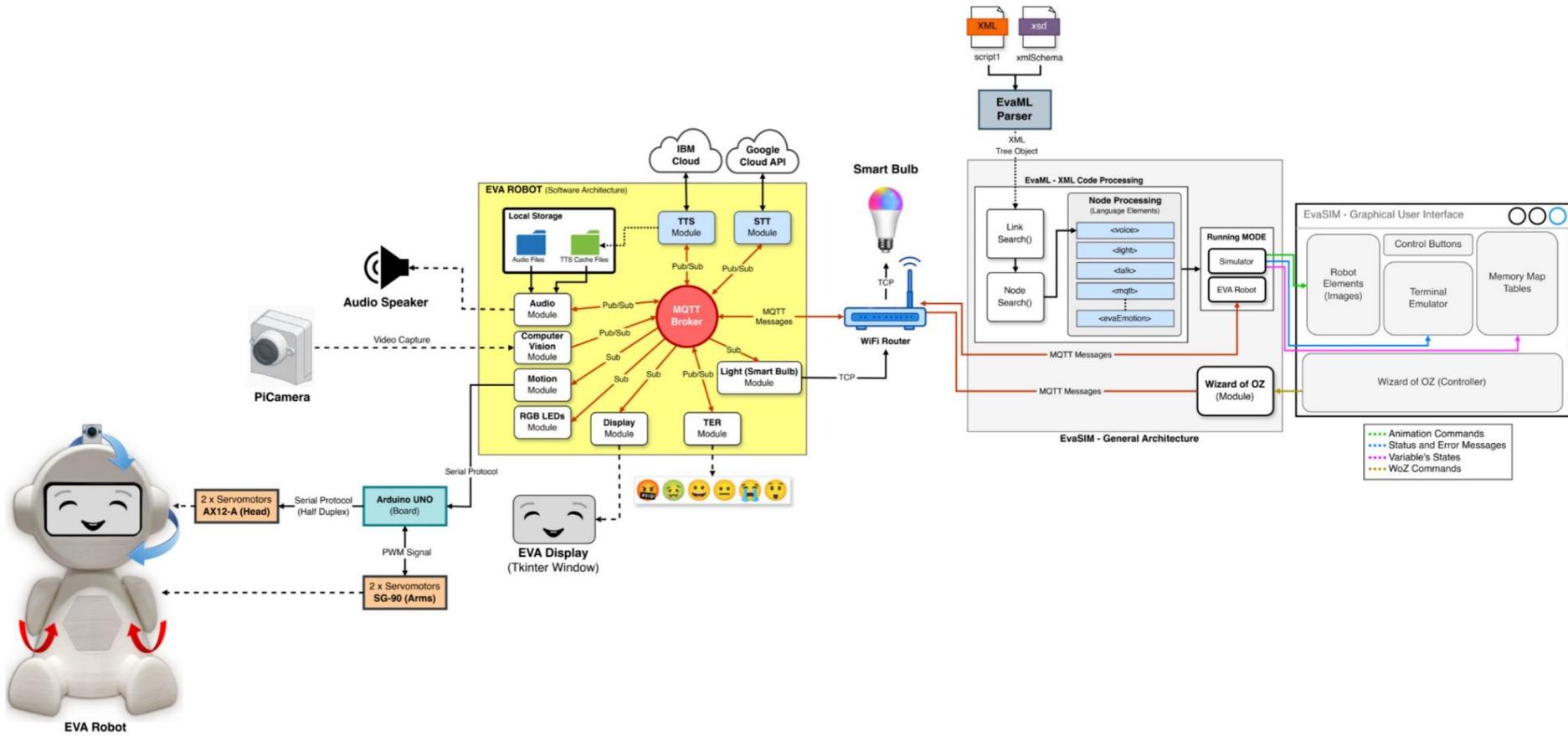
- voice recognition
- speaks

COMMUNICATION NON-VERBAL

- Expression through the eyes •
Movement of the head and arms
- Animation with LEDs and smart
lights • Recognition of
User's facial expression • QR
code reading

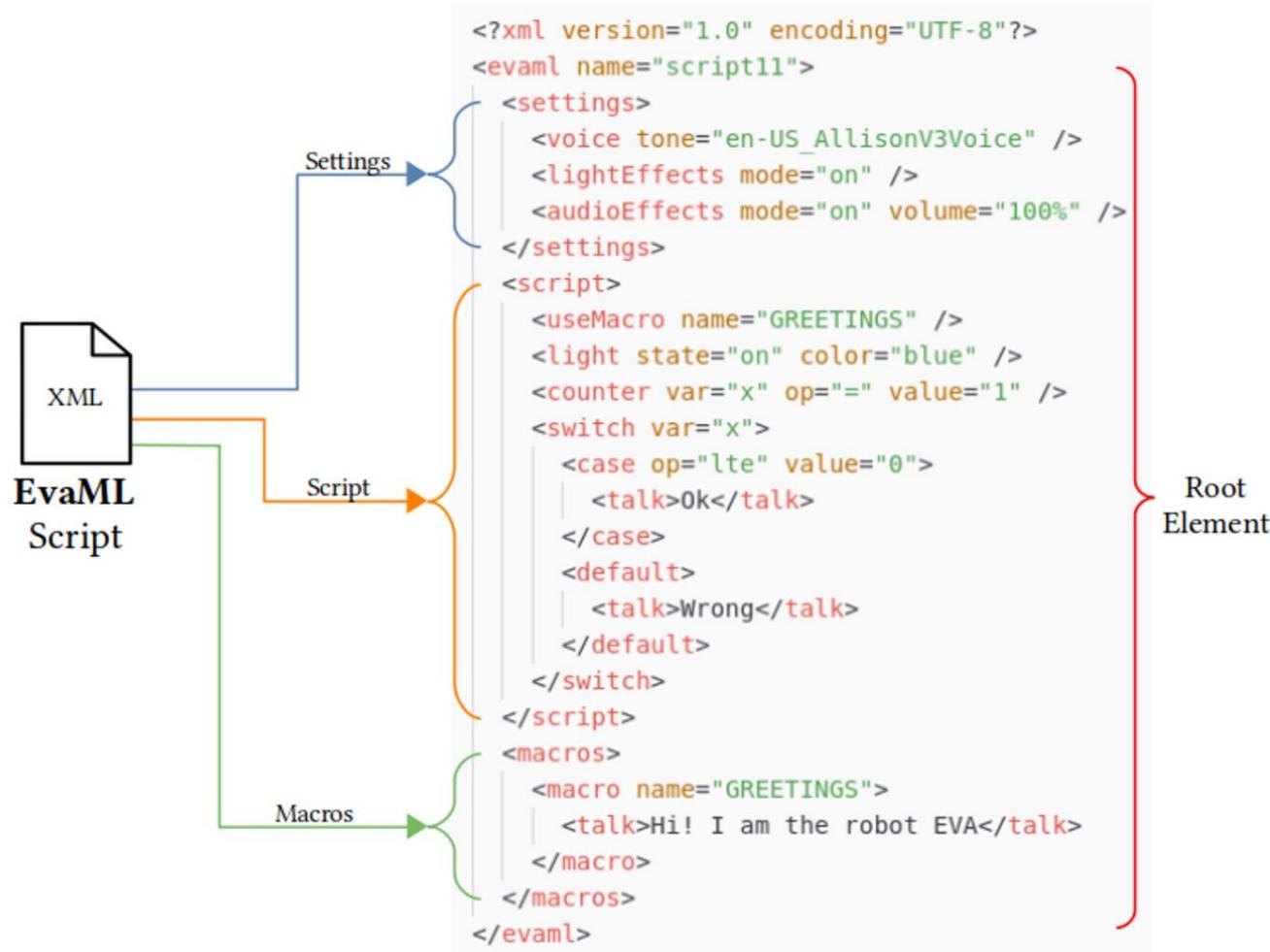


Platform for Controlling Social Robots



EvaML Programming Language

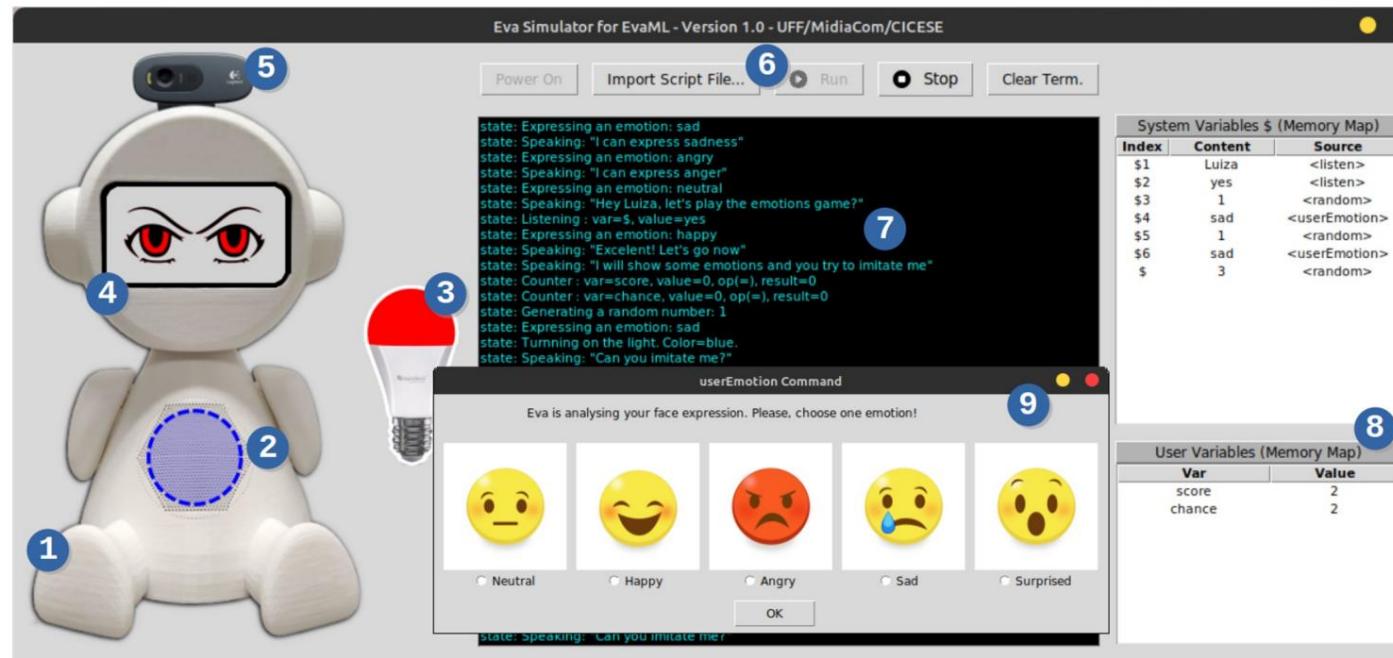
- Domain-specific language (DSL) based on XML



EvaSIM and Eva Virtual Simulator



- To test programs developed in EvaML





Partnership with Schools

- Develop computational thinking
- Teach programming concepts to students
- Encourage the use of social robotics in schools
- Collaborate in the teaching-learning process

Educa 360 Project



- Partnership with Project **#IncludeGirls**
- Educa 360 Hackathon in 2024 • Public Schools of Niterói – Paulo Assis State School Ribeiro
 - Altivo César Municipal School •
 - Alberto Torres Municipal School
- Programming Marathon
 - Teams designed applications to use the EVA Robot in schools
 - They learned the language and programmed in EvaML.
 - Testing the programs on the robot.



Hackathon Educa 360 - 2024





Social Robotics for Education

Thank you very much! Any questions?

Débora Christina Muchaluat Saade

debora@midiacom.uff.br



Fundação Carlos Chagas Filho de Amparo
à Pesquisa do Estado do Rio de Janeiro



Conselho Nacional de Desenvolvimento
Científico e Tecnológico