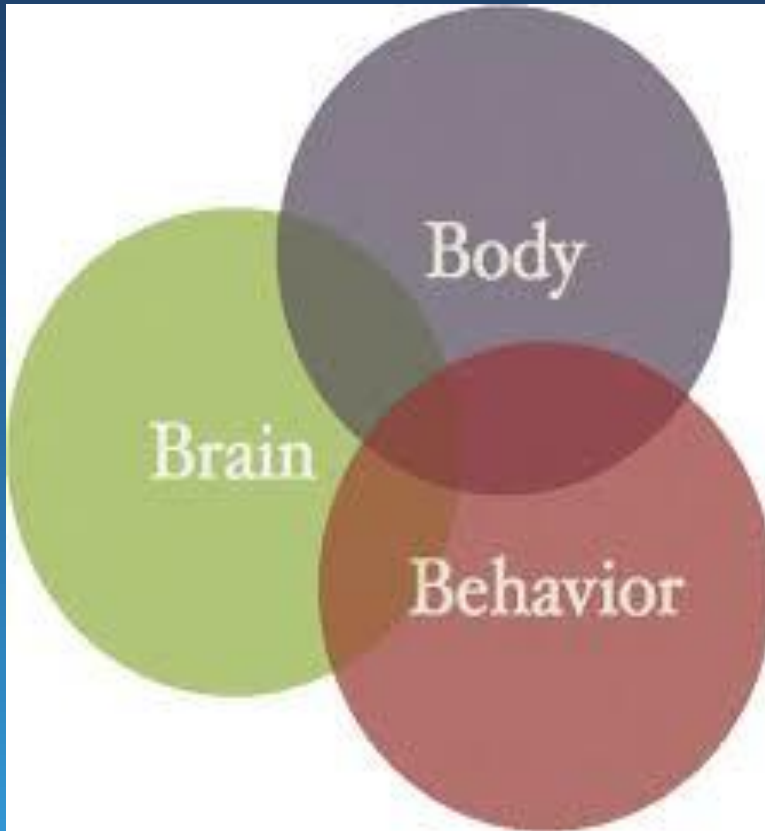An interdisciplinary collaboration of Theatre Arts and Social Robotics:

The creation of empathy and embodiment in social robotics

Empathy: the ability to understand and share the feelings of another.

Embodiment: a tangible or visible form of an idea, quality, or feeling.

Theatre Arts

A collaborative fine art utilizing speech, movement, dance, poetry, stagecraft, performance, text, and direction to tell a story.

Performance as Field Study

The collaborative work of an scholar/artist in research.

Performance Technique

- Stanislavski's Method. Based on Constantine Stanislavski's performance techniques utilized at the Moscow Art Theatre in the early 1900's.

- An authentic, realism-based performance technique created to respond to the representational – simulated acting of that time period.

- Lee Strasberg's The Method. A technique utilizing the recreation of sensory data to create behavior, character, emotion, and relationship.
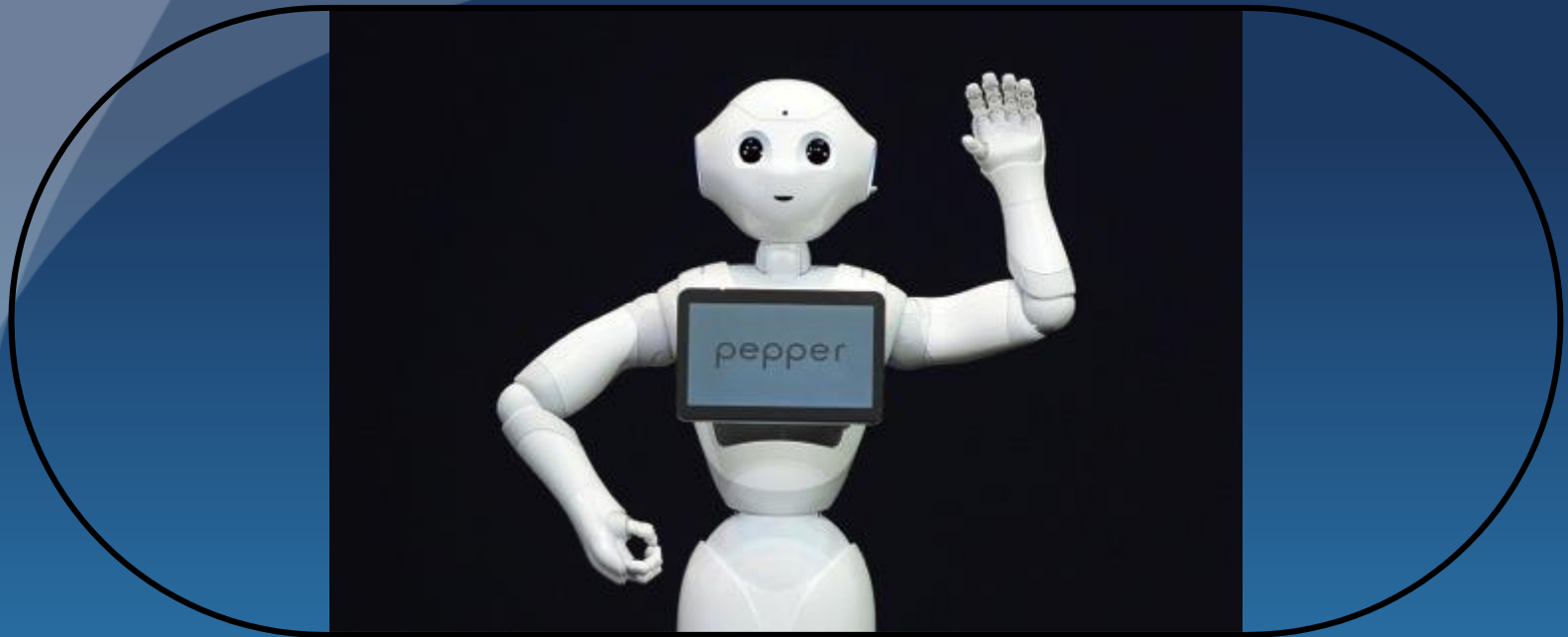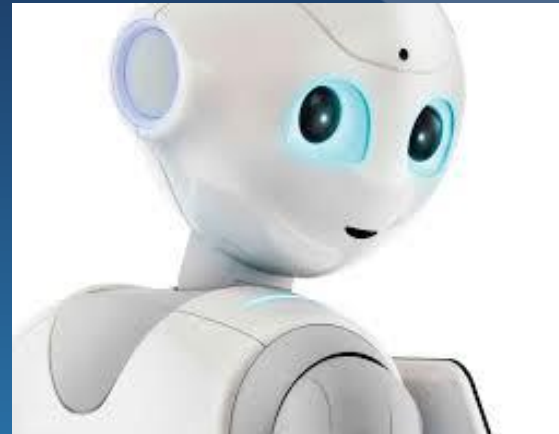
Social Robotics

A field of study in robotics examining
the social relationship between machines and
human beings.

Humanizing robots with Theatre methodologies

- Theatre arts methodologies of movement and speech can be used to authentic a truthful, engaging, and potentially even emotional relationship between robots and human beings.

2016
Social robotics in U.S.

Social robots in healthcare

Social robots in business

Social Robots and you.

- A telepresence robot, similar to UTA library's **double robot**, helps students attend school; a Pennsylvania student who was injured in a car crash, attends his classes while recovering, and a New Jersey boy with leukemia finishes out his school year with the help of a robot.

- Pepper the emotional robot, enrolled in a high school in Japan to learn alongside teenagers and potentially help with communication difficulties.

My research interest and passion is to add the artistic, expressive, and authentic methodologies of Theatre Arts to the social robotic landscape in order to better serve the human condition.
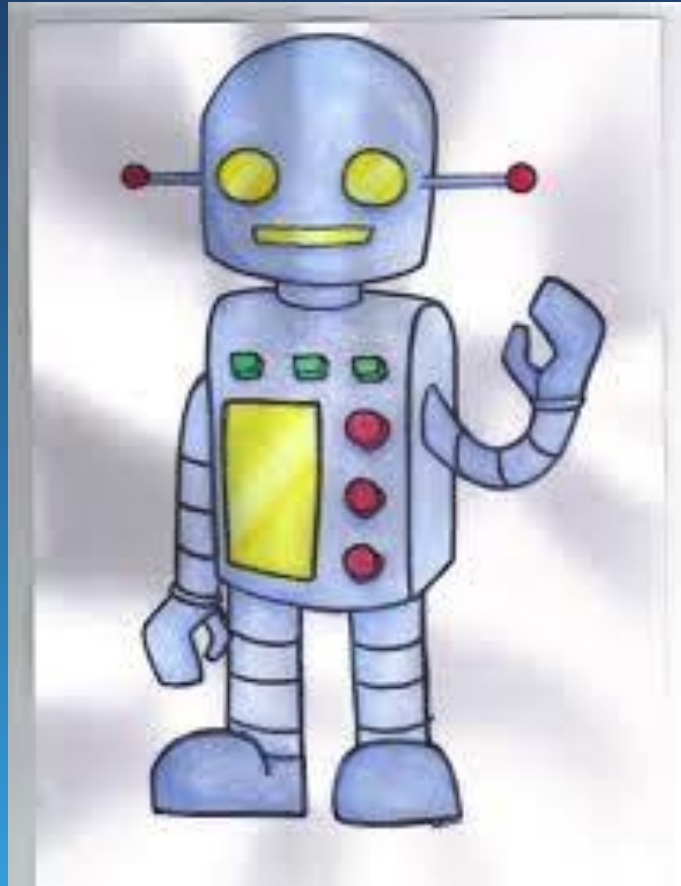
This is not the face of the future of social robotics...
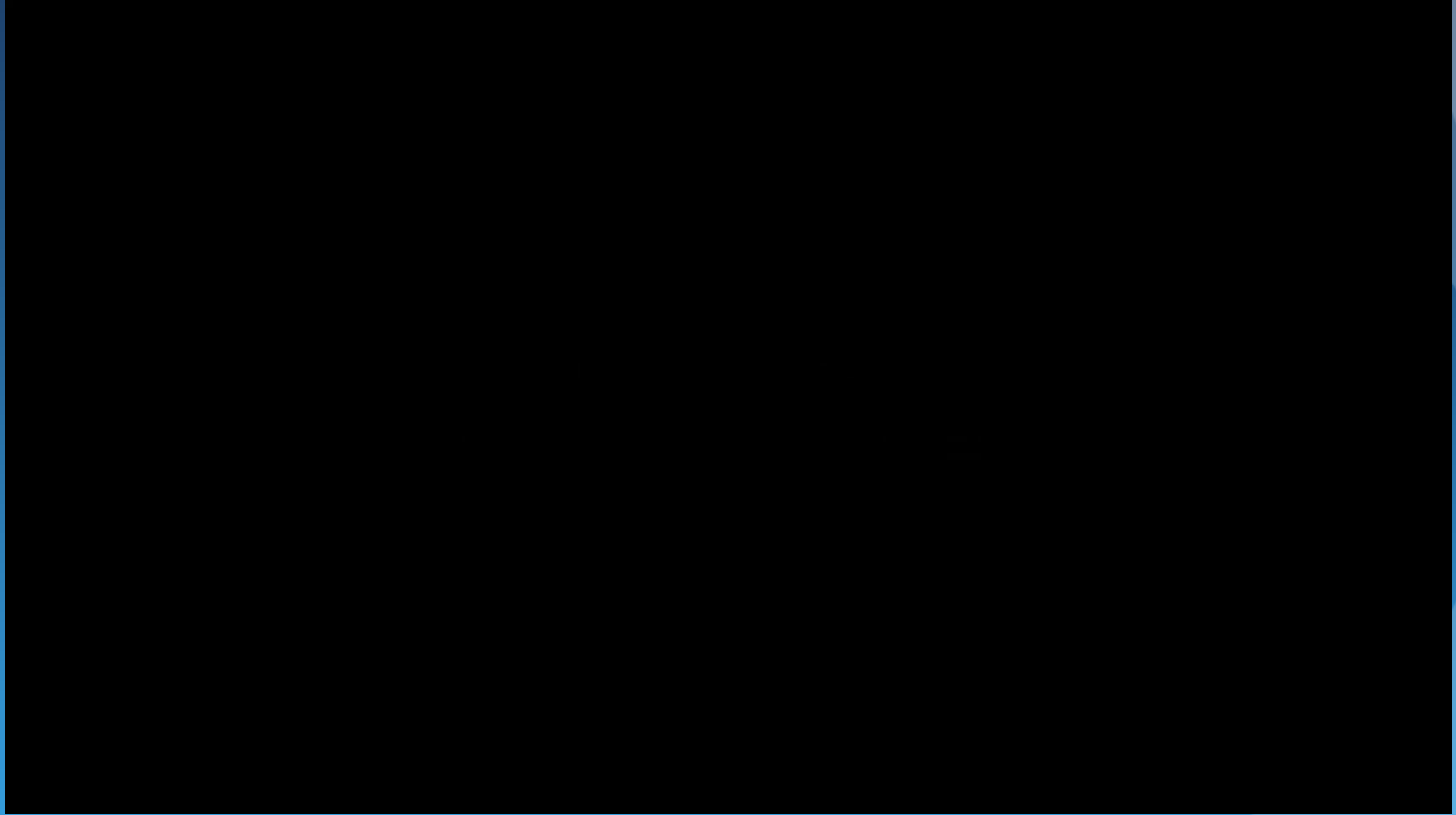
This is.

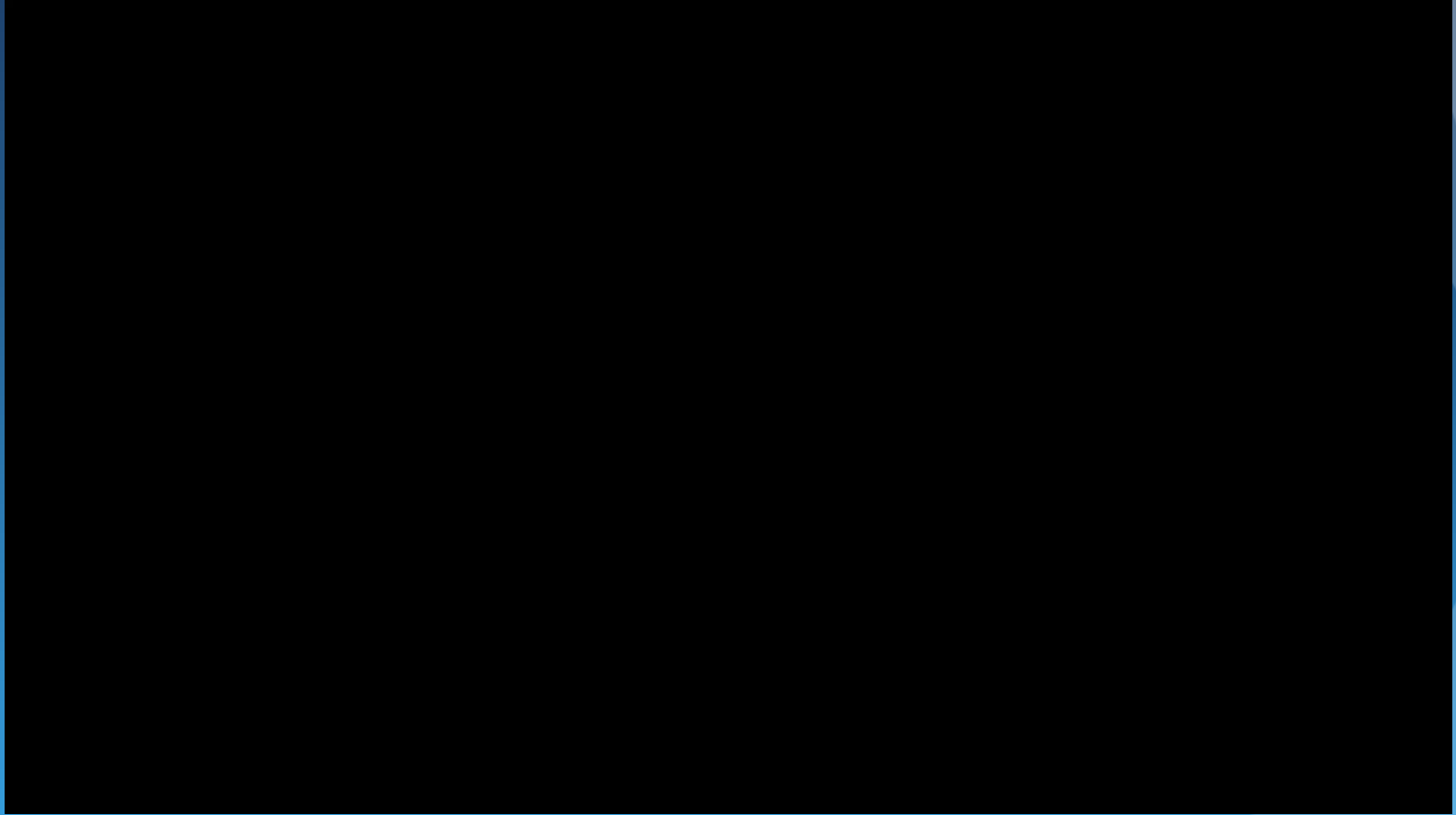# A brief timeline of robotics

Industrial - Denso

Industrial Denso?

Service Robot - TUG

Service or Social?

Human-Robotic Interaction

Human-Robot Interaction (HRI) is a field of study dedicated to understanding, designing, and evaluating robotic systems for use by or with humans. Interaction, by definition, requires communication between robots and humans.

HRI.org

Applications for HRI

- External funding – Grants NSF, NIH, NEA

- Consumer/marketplace applications

- Healthcare applications

- Education and therapeutic application

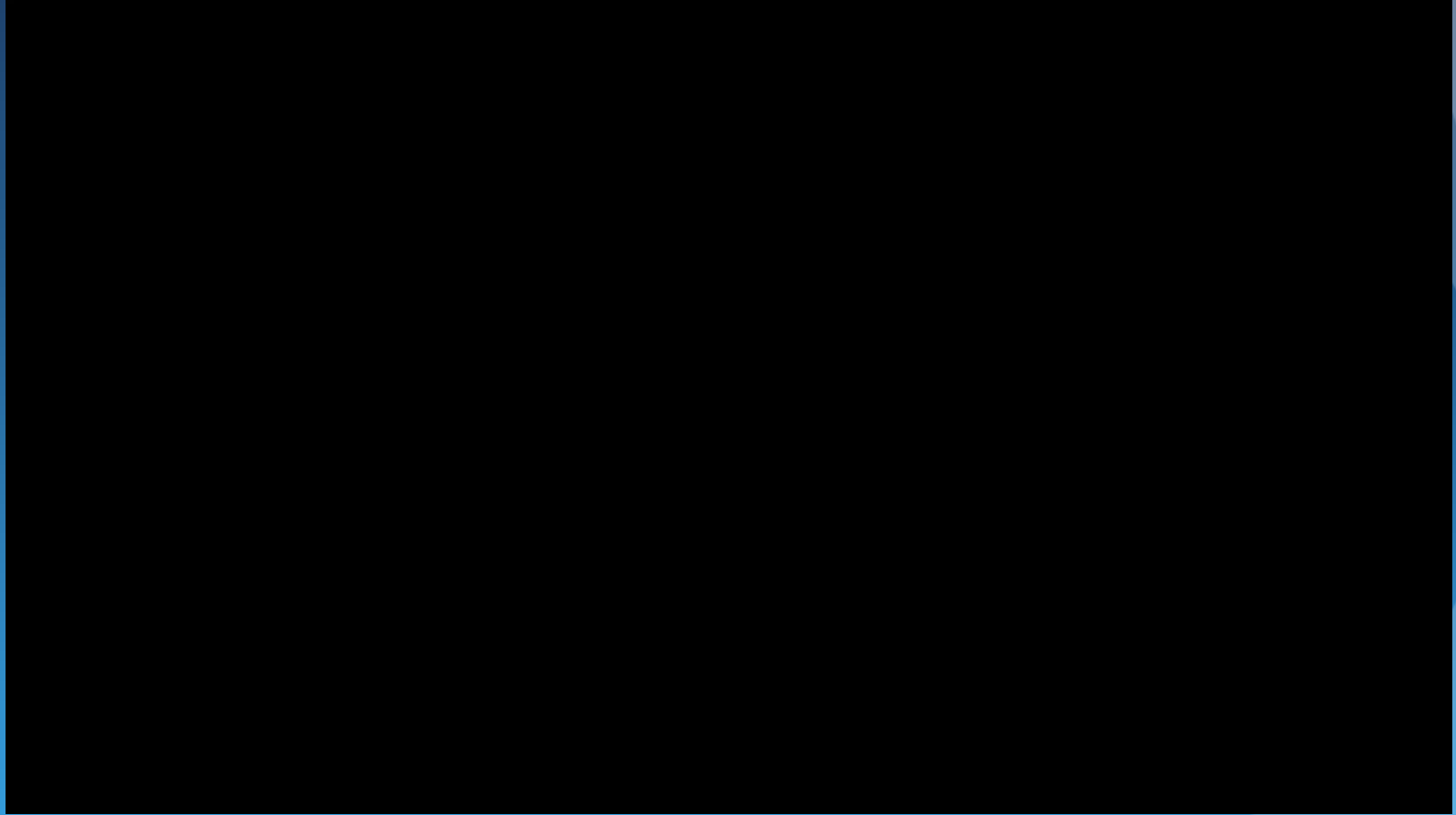# Social Robots: Pepper, Buddy, Jibo, and NAO

Buddy – UTA, Maverick Theatre Company

Pepper – UTA, Maverick Theatre Company

NAO – UTA, Maverick Theatre Company

Jibo – UTA, Maverick Theatre Company (pending)

Social robot - Buddy

Empathy and Embodiment in Buddy?

Applications for Buddy

- Grant work in HRI; healthcare, business, education

- STEM into STEAM models

- Movement and speech classes

- Entrepreneurial model for fine arts students

- Curriculum "Robots, Digital Humanities and Theatre" UTA course

- Performance; dance, theatre, spoken word, poetry

Emotional robot – Pepper
June, 2014

Pepper

What is Pepper?

- Emotional Robot

- Sensors embedded in its head scan the human face.

- Sensors measure the tension in the human voice.

- Learns to please based on positive feedback.

- Engineers designed the robot to be more like a child than an adult.

What can Pepper do?

- Navigate spaces on its own.

- Carry on conversations.

- Recognize when you are frowning or smiling

- Speak multiple languages.

What can Pepper not do?

- Hold or carry objects

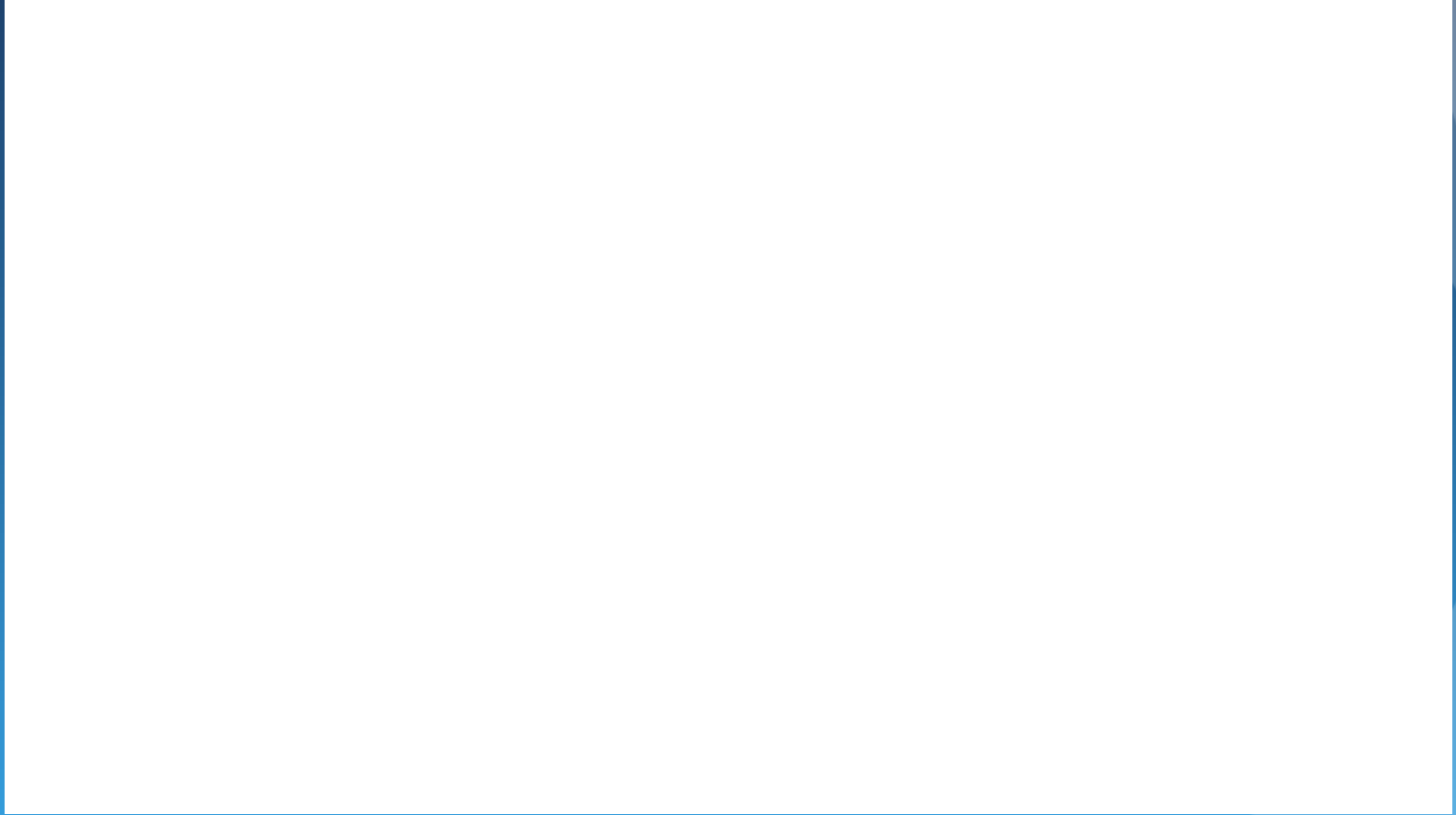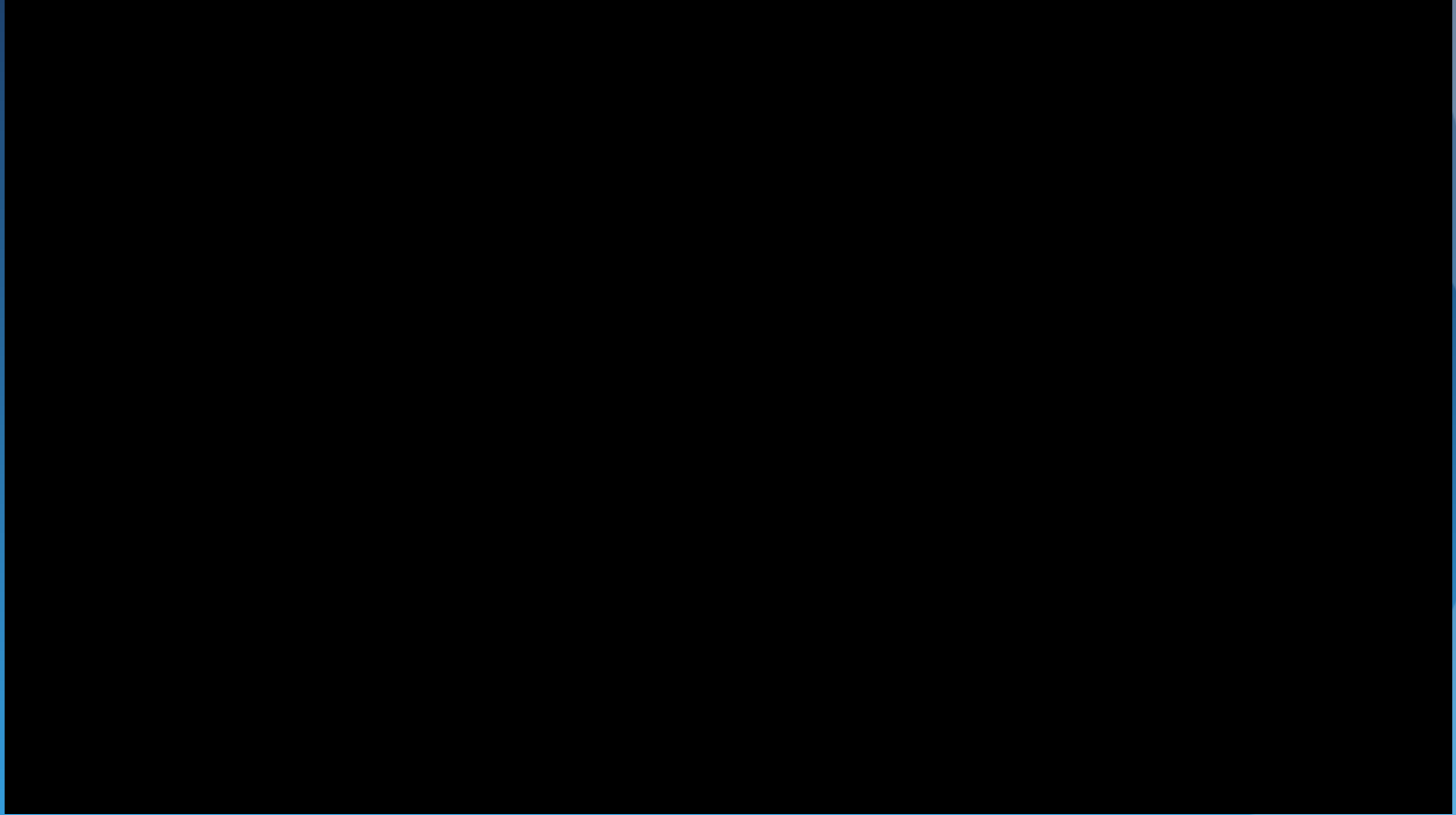- Go up stairs

Applications for Pepper

- Grant work in HRI; healthcare, business, education

- STEM into STEAM models

- Movement and speech classes

- Entrepreneurial models for fine arts students

- Curriculum "Robots, Digital Humanities, and Theatre" – UTA course

- Performance; dance, theatre, spoken word, poetry

- Study of emotion, connectedness

Social robot - Jibo

NAO robot

An autonomous, research-driven humanoid robot created by Aldebaran Robotics.

A "mature" social robotic platform.

Launch 2004.

HRI

- What do you think of Pepper/Buddy/Nao/Jibo's shape?

- What do you think of the tone of Pepper/Buddy/Nao/Jibo's voice? Enjoyable, annoying?

- Would you feel comfortable with Pepper/Buddy/Nao/Jibo at work? At home?

- Would you bring a Pepper/Buddy/Nao/Jibo robot to an elderly family member as a social companion?

- Does Pepper/Buddy/Nao/Jibo bore you?

- Does Pepper/Buddy/Nao/Jibo repulse you?

Engineering Emotion

- Theatre establishes behavior, gesture, speech, movement, emotion, and relationship as elements that create character, or personality.

- Theatre performance techniques used in human-human interactions are used to create human-robot relationships through behavior, gesture, speech, movement, and emotion.

- Outcome: Humanizing Robots. Engineering emotion to create authentic human-robot relationships

DAHI Robot - Turtlebot

- Pie-bot

- Cardboard head and base

- Motorized head tilt

- Abstract eyes

- Tablet for communication

- HRI sensory modalities of audio, speech and sound, movement, visual, and tactile elements.

Privacy and Ethics

- Nearly all robots are equipped with sensors to monitor the world around them.

- Robots never forget.

- Robots can go places humans cannot. Insect-design robots.

- Robots could protect vulnerable populations; elder abuse, child abuse.

- Who does a robot caretaker answer to?

*The future is here.
It's just not widely
distributed yet.*

William Gibson, science fiction writer,
subgenre Cyberpunk