Virtual Learning Environments: A Journey of Pure Joy

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Labs: SREAL (sreal.ucf.edu); CREST (teachlive.org)

Who I am Academically: The Early Days

- 1962 as a programmer at RCA Aerospace (long gone)
  - Validation of BMEWS software on a Friden Desk Calculator
  - Radix sorting via wiring an IBM 082 card sorter
  - Fortran on IBM 7090/7094;
  - Assembler on IBM 1401/1410;
  - Pin board coding on Burroughs E101;
  - Various Fortran software for Lunar Excursion Module
  - Software for automatic test equipment – mylar tape
  - Microcode to emulate IBM 7090/7094 and AN/UYK-1 computers
- 1966 as a programmer at Advanced Research Laboratory
  - Worked on Mark 48 torpedo acoustic interference

Who I am Academically: The 70s, Early 80s

- NRC Postdoc and then Taught at Penn State, Tennessee
  - Research on Operating Systems, Data Flow Analysis, Computability
  - Computability stuff can be seen at Google Scholar page
  - Developed ASSIST-V virtual machine simulator for IBM 360/370
  - Developed source level optimizers based on interval analysis
- Moved to UCF in 1980
  - Software Environments, usually for K-12
    - Computer Power
    - Visible Pascal
    - Picture Programming
    - Formula Vision
    - Action Graphics

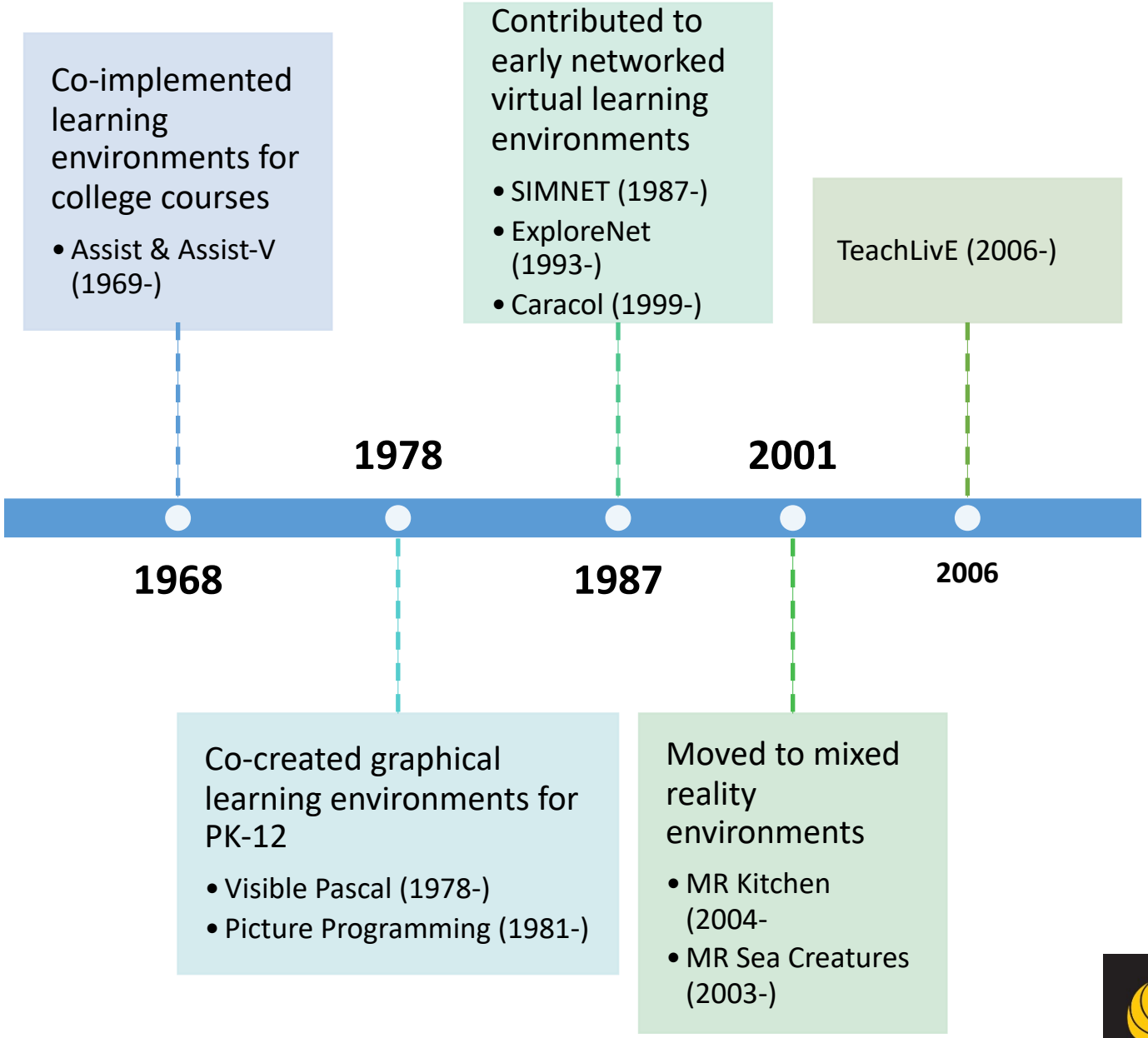
Who I am Academically: Late 80s and 90s

- Moved back into simulation but now through VR
  - SIMNET – network protocols; dynamic terrain
  - Real-Time Fluid Flow
- But stayed mainly focused on learning environments
  - Virtual Academy
  - ExploreNet – Shared virtual worlds for youth
  - Caracol Project – Collaboration with Archaeologists
- Also Had Fun with Parallel/Distributed Processing
  - Constraint Logic Programming
  - View Centric Reasoning
  - Tuple Spaces
  - Lazy versus Eager Semantics

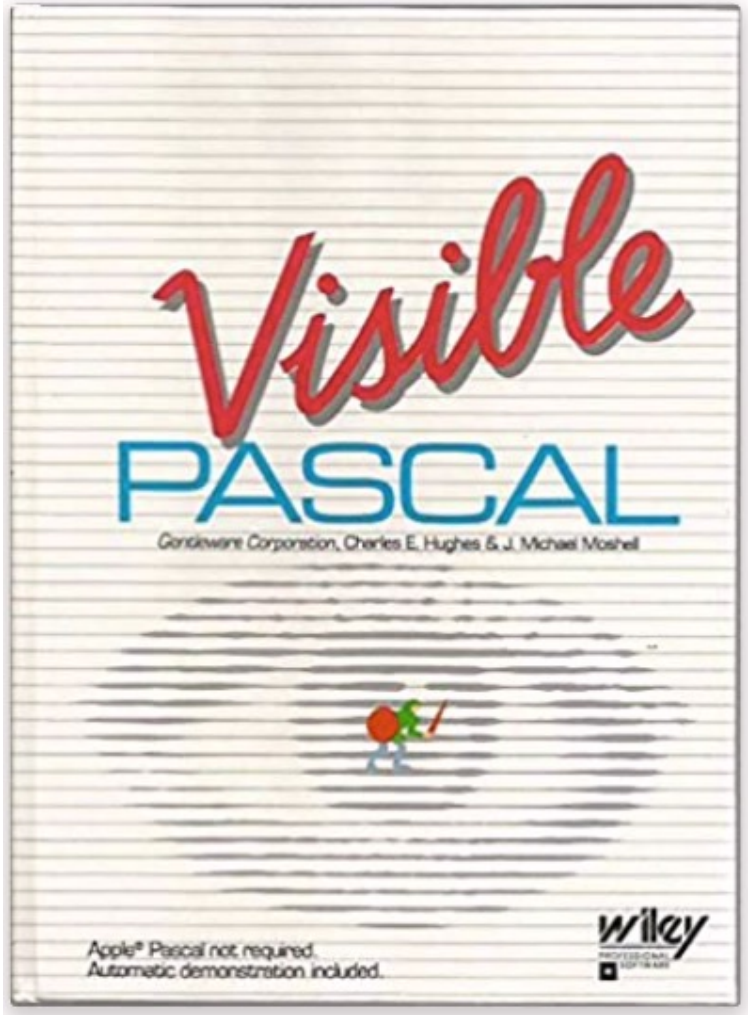
Who I am Academically: MR in 2001-2010 Decade

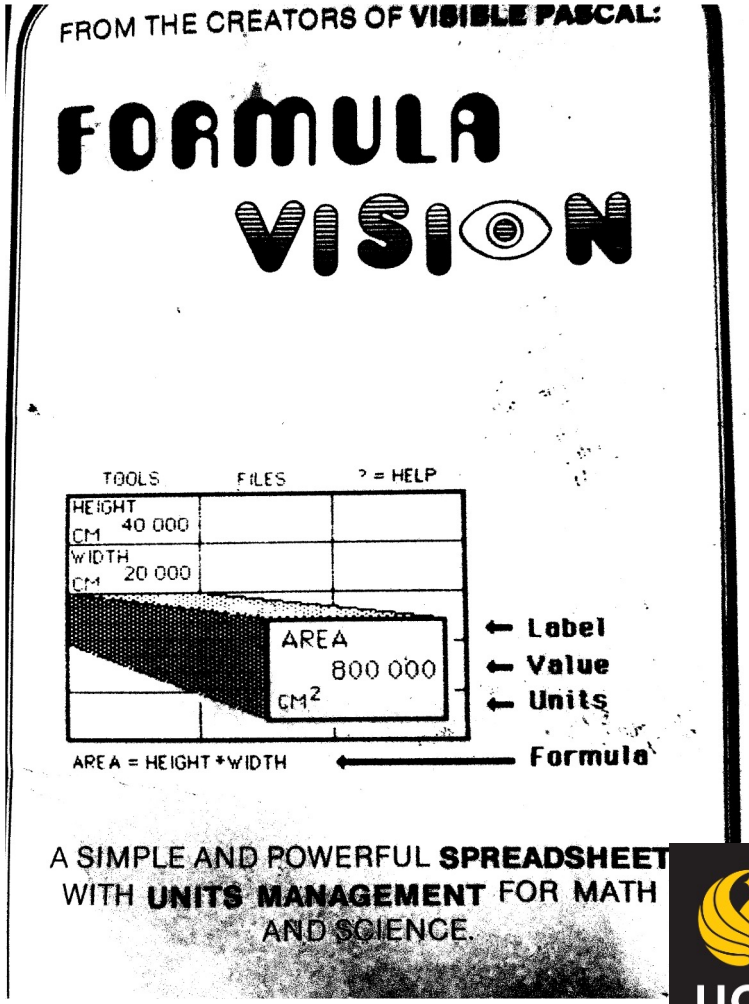
- MR via Canon Video See-Through HMD
  - Time Portal -- Entertainment
  - MR MOUT – Situational Awareness
  - MR Sea Creatures – Free Choice Learning in Science Centers
  - MR Kitchen – Cognitive Rehabilitation
- Environmental Economics – Support for Public Policy
- Digital Preservation of Culture – Shadows of Canaveral

My Evolution to Virtual Learning Environments



Software for Young Folks (1978-85): Shoutout to Mike Moshell





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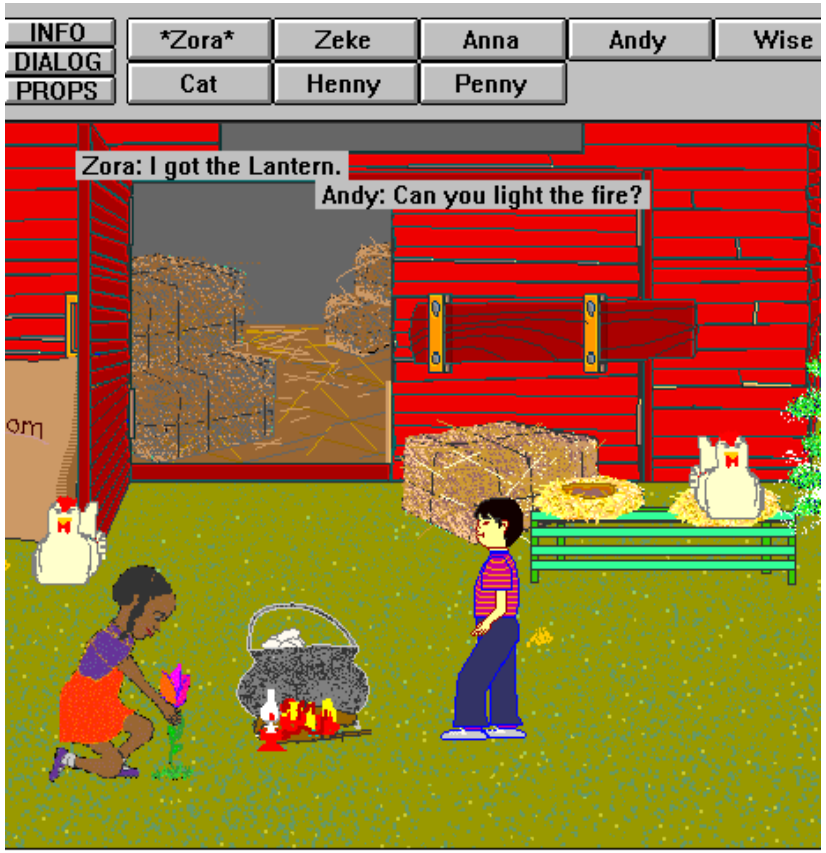
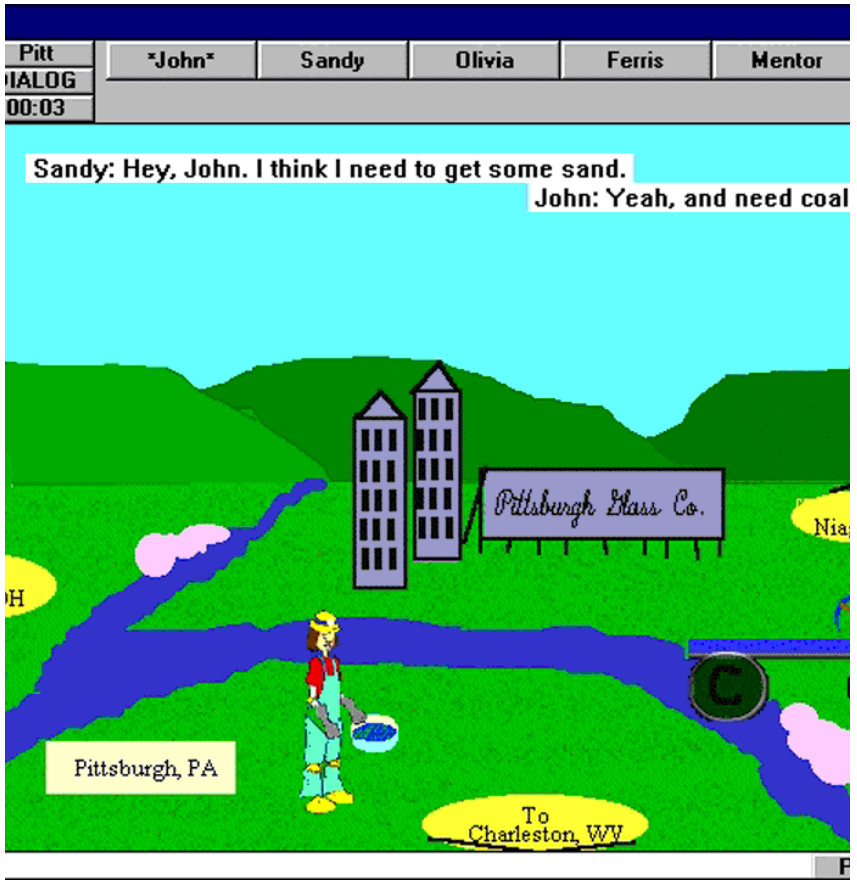
SIMNET: 1987-1992: More Mike Moshell (IST/VSL)

ExploreNet Shared Virtual Worlds (1993)

And Even More Mike Moshell





MeasureMe (2000): ShoutOut to Dean Reed, Eileen Smith et al.

TupleSpaces

Unified Coordination and Communication

David Gelenter

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Time Portal (2002)

Shoutout to Canon
Shoutout to MCL Gang

Chris Stapleton,
Eileen Smith,
Scott Malo,
Shane Taber,
Darin Hughes,
Matt O'Connor,
Nick Beato,
Paulius Micikevicius
At al.

Sea Creatures (2004)

MR MOUT (2004)

MR Kitchen (2004): Augmented Virtuality

Patient had aneurism six years earlier; therapist wanted feasible approach

Patient and therapist in context of patient's kitchen but in safety of clinic

Shoutout to Cali Fidopiastis, Janet Whiteside, and MCL Gang

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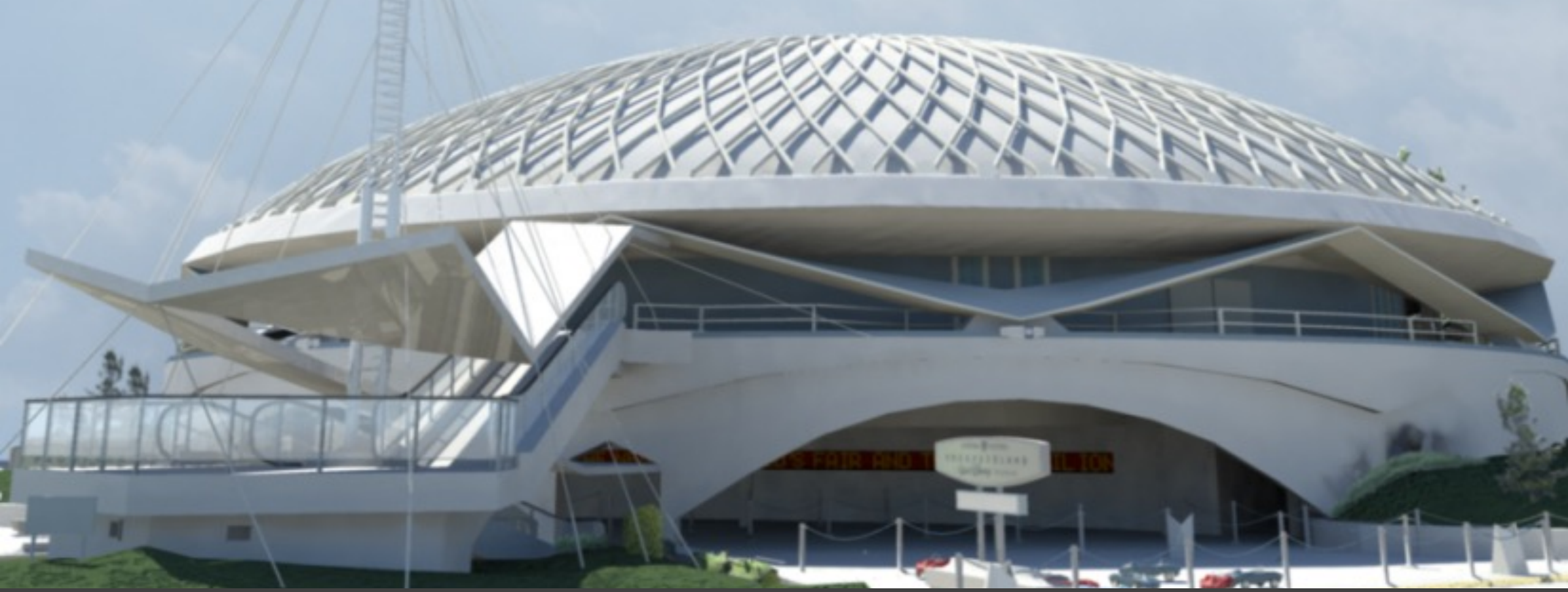

1964/65 NY World's Fair (2009-14)

Shoutout to Lori Walters, Dan Mapes, et al...

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TeachLivE Paradigm

Shoutout to
Lisa Dieker
& Mike Hynes

The Current Fun I have

- SREAL: Synthetic Reality Laboratory
- TeachLivE: Teaching and Learning in a Virtual Environment
  - Teacher Prep
  - Protective Strategies
  - De-Escalation Skills
  - Non-Suicidal Self-Injury
  - Social Skills, especially for kids with ASD
  - Emotional Responses in Virtual Learning Environments
- Learning Sciences

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Examples of Different Ways TeachLivE Can Be Used to Help Prepare Educators

Observations

- Time spent with each student
- Proximity to each student
- Time spent talking versus listening
- Types of questions asked
- Time from asking a question to giving answers or hints
- Verbal and nonverbal communication

Research Findings

Four 10-minute Sessions can change teacher behavior

Training transfers into the real classroom

Areas measured:

- Positive Specific Praise
- Asking Higher Order Questions

Some of TeachLivE's Usage

- Gates Foundation and commercialization
- 30,000+ teachers/administrators per year
- Change targeted behaviors in just four 10-minute sessions
- Used in Abu Dhabi, Australia, Brazil, Italy, South Africa, …
- Best Western, Amazon, Doctors w/o Borders
- Inclusive classrooms (Bert Martin Foundation)
- Social skills development for children with autism
- Peer tutoring
- Protective skills for first-time-in-college students
- Prepare STEM GTAs for active learning environments
- Prepare medical residents to address needs of NSSI teens

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TeachLivE: Inclusive Classrooms

Shoutout to Katie Ingraham & Eric Imperiale

Inclusive High School Class

Inclusive Kindergarten

Social Skills

CollegeLiVE

ShoutOut to Darin Hughes and Tom Hall

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Parents, Administrators, and Potential Contributors

ShoutOut to UCF Foundation

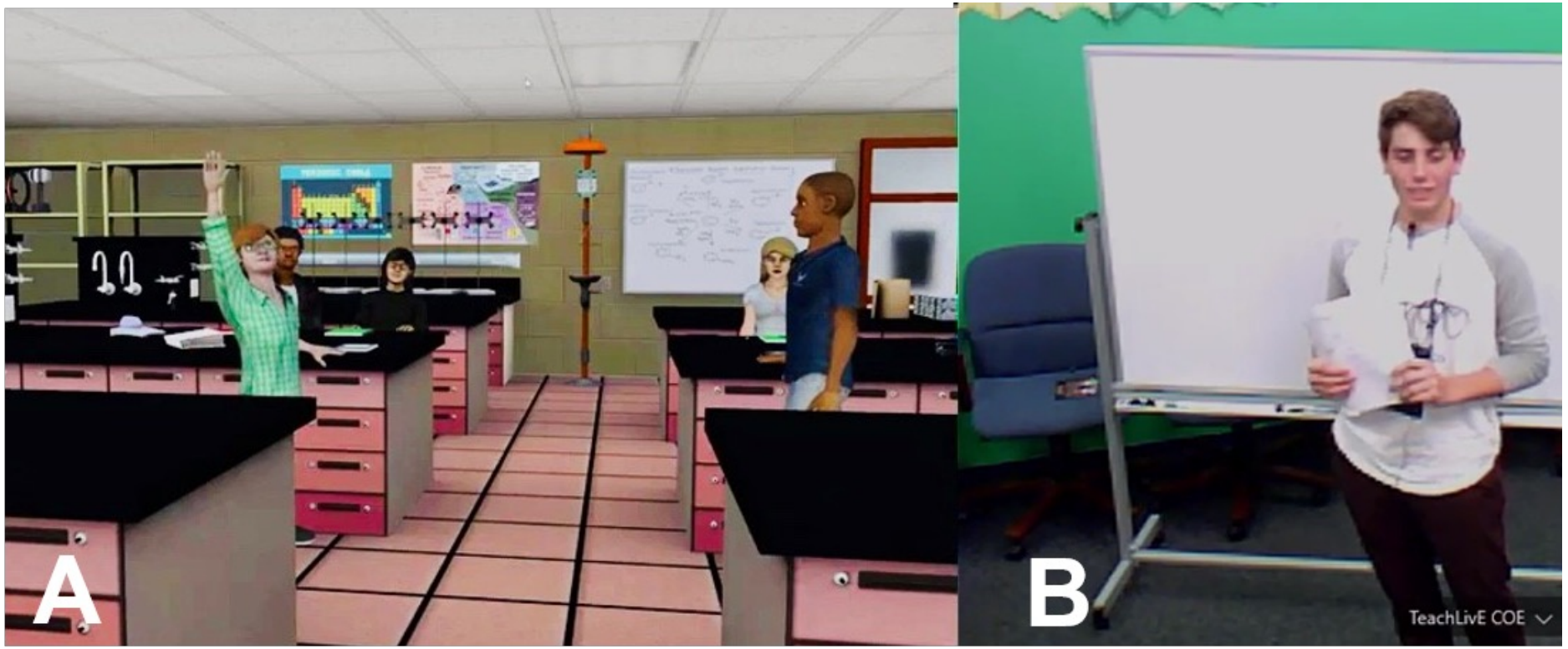
Non-Suicidal Self Injury

Physicians can practice patient interviews with a live avatar.

Shoutout to Lindsay Taliaferro

GTA Training

Shoutout to Jackie Chini and Erin Saitta



Non-Escalation Skills

Shoutout to Julie Kent and Chief Meade

Behind the Scenes with Katie Ingraham

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Why Not Automated for All Virtual Character Behaviors?

Handling of complex, contextual interpersonal interactions.

Multiple correct ways to teach / converse / interact.

Multiple paths to desired outcomes.

Rapid deployment of scenarios

Can use to inform automated behaviors.

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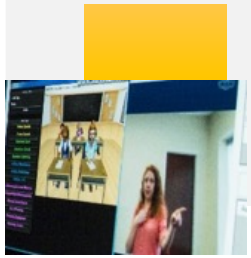
Research Directions:

Shoutout to Kamran Ali and Sachin Shah

Automated recognition of emotions.

Recognition of specific verbal and non-verbal behaviors.



Automated annotations in support of reflective learning.

Automated avatar behaviors

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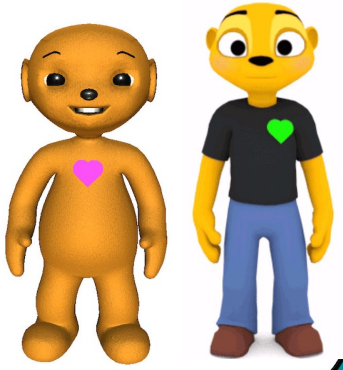
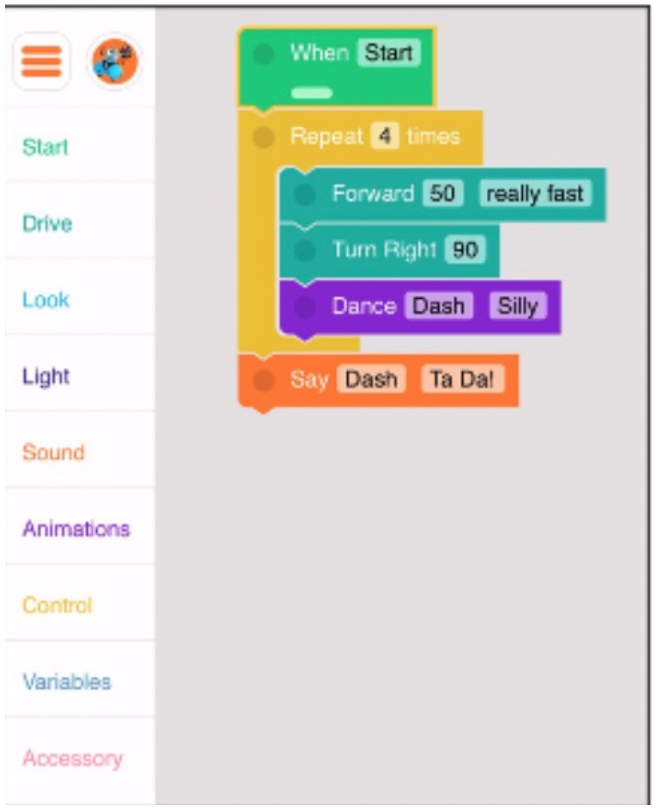


PROJECT RAISE

Virtual Companions Used for Coaching/Calming

Context for Early Grade STEM: Meet Dash



Google and Wonder Workshop

We created our own Interface using Blockly.

Why did we rewrite when WonderWorkshop exists?

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Simplified Interface with Teacher Configuration

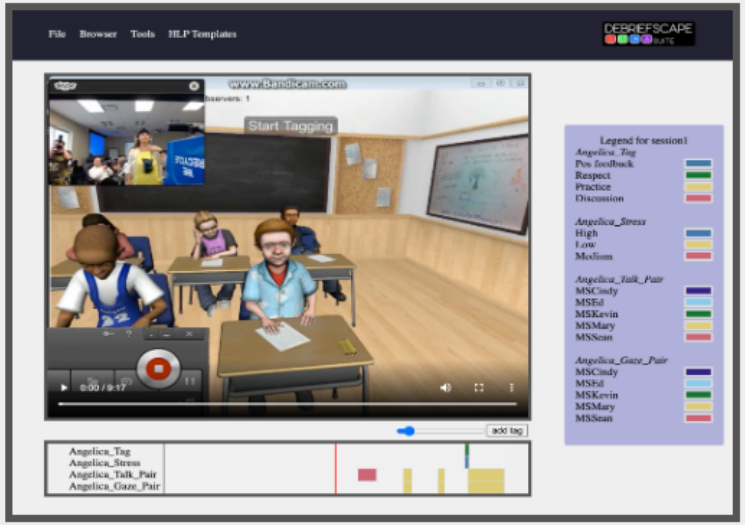
Shoutout to John Murphy and Sachin Shah

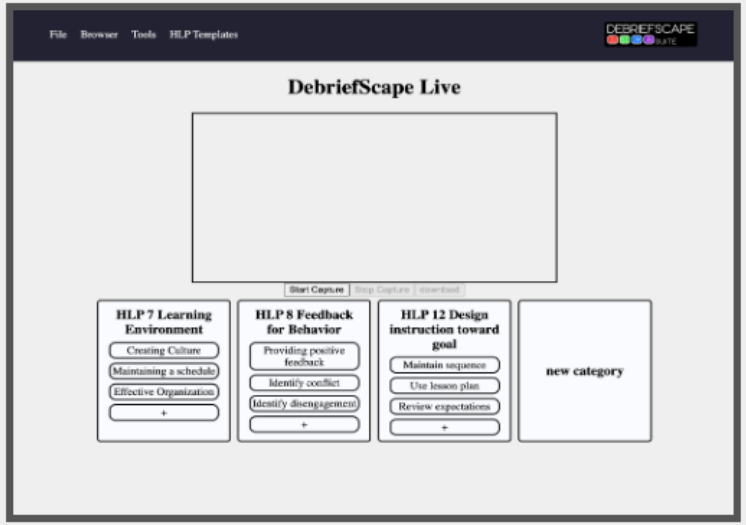
Virtual Companions to Give Advice on Cyberbullying & Personal Information Disclosure

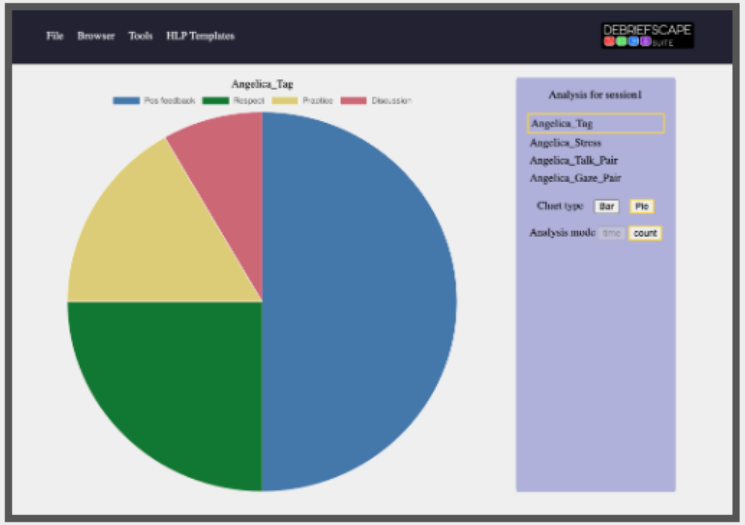
File Browser Tools HLP Templates

DEBRIEFSCAPE SUITE

Welcome to DebriefScape! To get started open a session folder that includes a video and `config.DScape` or create a new session from a single video.







Shoutout to Sachin Shah

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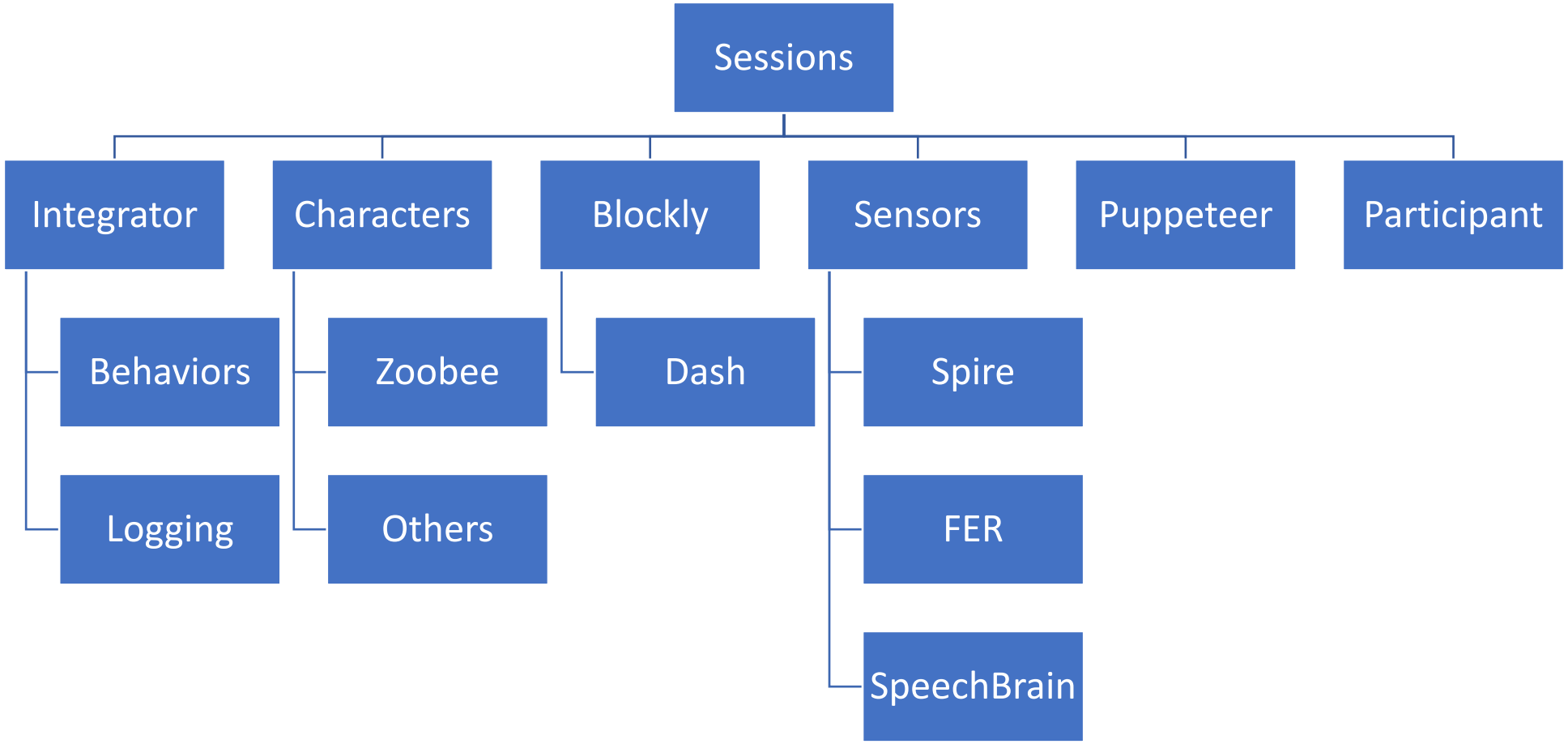
DEBRIEFSCAPE SUITE

Web-Based Environment



Comments of Research Directions

- Lisa Dieker's fingerprints are on Everything

- Kamran Ali: ML, Emotion Recognition, Focus
- Sachin Shah, Kamran Ali: Web-Based Integrated System
- John Murphy, Sachin Shah, Matt Taylor: Blockly Environment
- Becky Hines, Shaunn Smith, Caitlyn Bukaty, Missy Glavey, Katie Ingraham, Ilene Wilkins, etc.: RAISE
- Katie Ingraham, Angelica Fulchini, et al.: Cyberbullying & Privacy
- Becky Hines, Rachel Hallett-Njuguna, et al.: Coaching

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Good
Workforce
Autism
Smoker
GTA
Content
Pre-suicide
Educat
Feedbac
Intervie
Health
Situational
Instructional
Strategies
Patterns
Hospitality
Training
Challenges
Mindfulness
Skills
Judgement
English
Practice
Nonverbal
Management
Protective
Peer-to-Peer
Co-teaching
Recognition
Pedagogy
Fundraising
training
Neurophysiological
Diversity
Delivery
Sexuality
Bias
Bullying
learners
Implicit
Debriefing
Cessation
Messaging
Coaches
Tutoring
Micro-credentials
Conversation
Cognitive
Emergency
Nursing
Error

Sampling of Collaborators and Former Students