New-Media Performers

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VISGRAF Lab - IMPA

Not About the Looks
but the Moves!

Expressivity
not Necessarily Realism…

Over the Uncanny Valley
others are doing It
See for Yourself

• The Lion King

• Gemini Man

Gemini Man

Real-Time Live!
Real-Time Live Performance!

• Not Raw
  - Low Level Capture
• but, High Level
  - Semi-Direct Control
  - Interpretation

Performance!
“from beginning to end”

New Performers
• Actors
• Puppeteers
• Dancers
• Musicians
• AI Bots

New Media
• Fragmented
• Multi-Faceted
• Integrated
• Interacting
New Show

- Cinema
  - Theatre / TV / Dome
- VR
  - 360 / 6 DoF / Situated
- AR / MR
  - Glass / Mobile
- Installations
  - Multi-Projections, etc..

The VISGRAF Lab Experience

2006 — 2019

Modals

- Dance (2007)
- Music (2009)
- Theater (2017)
- Puppeteering (2019)
- AI Bots (2020)

Dance - Projects

- Expressive Trajectories - 2007
- Choreographisms - 2010
- DMPM - 2010
- Body and Media - 2013
Expressive Trajectories

• Unsquare Dance

Choreographisms

• Experiment 4 - Ballet

DMPM

• Dance to the Music, Play to the Motion

Body and Media

• Em3
**Dance Tech**

- Mocap
  - In House (simple IR)
    - Points
  - Optitrack (IR)
    - Skeleton
  - Kinect (RGBD)
    - volumetric
- Interpretation
  - Visual (Rules)
  - Motion (Data Base)

**Music - Projects**

- Pandeiro Funk - 2009
- Guitar Leading Band - 2010

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**Pandeiro Funk**

- Live in New Orleans

**Guitar Leading Band**

- Air Guitar
Music Tech

• Input
  - Microphone
  - Camera + Markers

• Improvisation
  - Mode-Based

• Output
  - Audio / Video

Theatre - Projects

• The Tempest - 2017
• After The Tempest - 2018

The Tempest

• VR Kino+Theater

After The Tempest

• VR Tour
Theatre Tech

- **Body**
  - Mocap - IK + VR
    - Optitrack (rigid body)
    - Vive (trackers)
  - Control
    - Unity / Final IK (6 references)

- **Head**
  - Face
    - Masks
    - Expression
  - Eye
    - Procedural (Expressive Eyes)
  - Lip Sync

Puppeteering - Projects

- **O Boneco** - 2019
- **Lilith & Wood** - 2019

O Boneco

- Expanded Puppeteering

Lilith and Wood

- The Universe
**Puppeteering Tech**

- Control = Hands
  - Leap Motion
- Movement
  - Modes (gesture based)
- Presence
  - Screen / AR
  - VR

**Intelligent Agents - Development**

*Work in Progress*

- Robot Dog (*)

**Intelligent Agents Research**

- Middle Level Tasks
  - Deep Reinforcement Learning (ML)
    - Off-Line Training
    - On-Line Interaction
- High Level Behaviour
  - Decision Trees (AI)
- Audio/Visual-Based Senses
- Optional Director Control
Lessons Learned

- Multi-Sensory Input
- Modal Control
- Natural Interaction
- Stylistic Interpretation

The Future

- Integration

New Media Ecosystem
- Actors
- Dancers
- Puppeteers
- Musicians
- Directors
- VR
- AR/MR
- Public
- Installations
- AI Bots
- New Media Ecosystem

“The best way to predict the future is to invent it.”

— Alan Kay (and others such as Abraham Lincoln and Peter Drucker)