

# Expressive Trajectories

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IMPA

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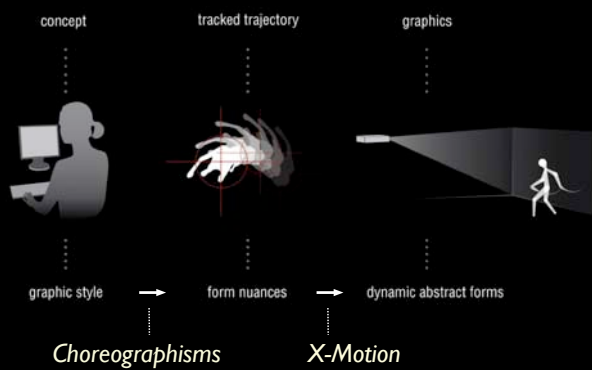
## the Project

*Interactive Digital Art / Contemporary Dance*

- Interdisciplinary
  - Vision
  - Graphics
  - Animation
- New Media!

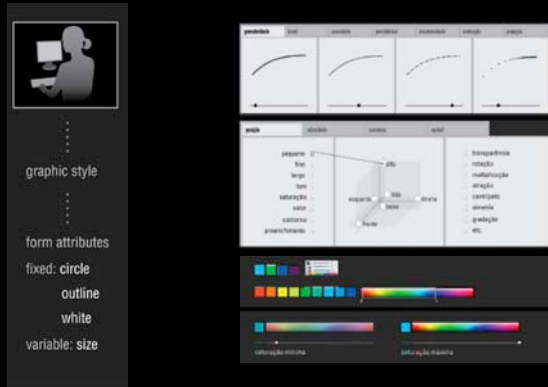
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## Vision



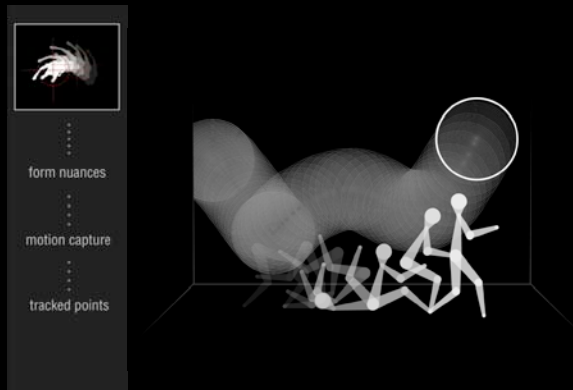
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## ▶ from Style ...



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## ▶ ... to Expression



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## Outline

- The System
  - *X-Motion*
- The Interface
  - *Choreographisms*
- The Experiment
  - *Unsquare Dance*

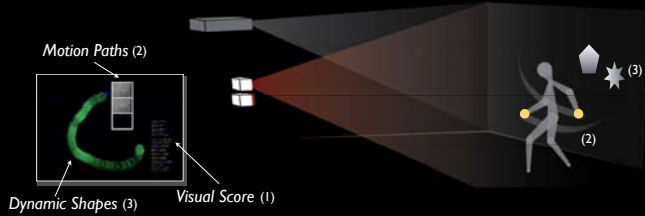
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# the X-Motion System

- Authoring

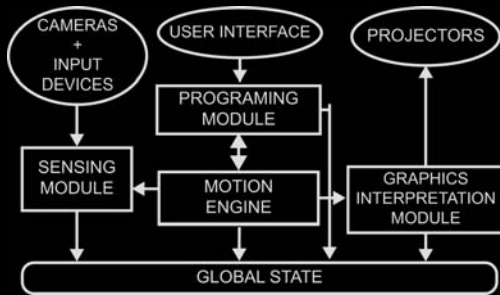


- Real-Time Interaction



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## ► Architecture



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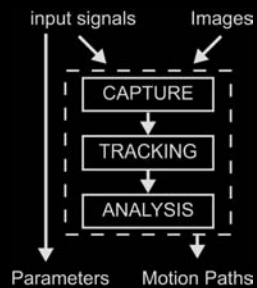
## ► Sensing Module

- Data Input

- Camera
- Other Devices

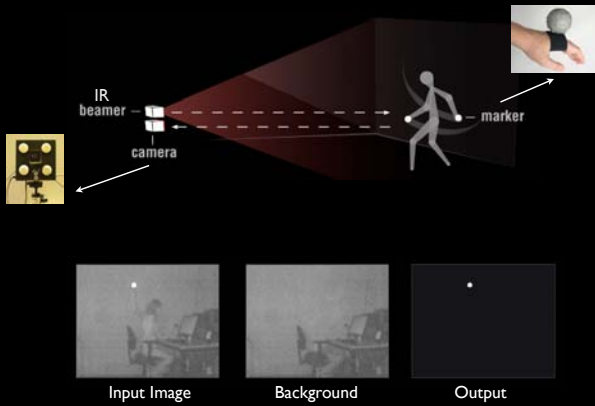
- Pre-processing

➡ Real Time



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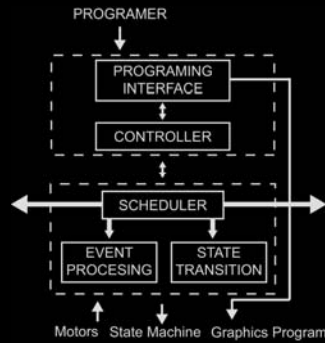
# Tracking Points



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## ▶ Control & Execution

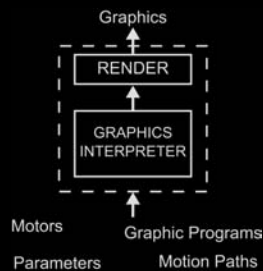
- Programming Module
  - Control Interface
  - Data Management
- Motion Engine
  - Execution
  - ★ *Finite State Machine*



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## ▶ Graphics Interpretation

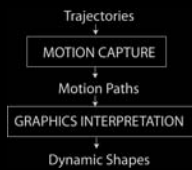
- Visual State
  - Motion Paths
  - Parameters
- Procedural Support
  - Dynamic Shapes
- Rendering
  - OpenGL



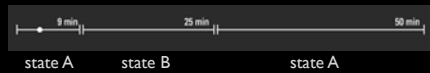
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# Choreographisms

- Graphics Interpretation



- Visual Scores



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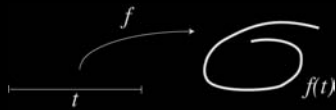
## ► Motion Paths

- Point Trajectories

- Markers on Dancer's Body

- Parametrized Curves

- Time
- Space



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## ► Dynamic Shapes

- Spatial Structure

- Shape

- Temporal Structure

- Duration

- Behavior

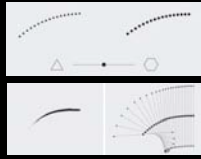
- (inter) Action

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## Spatial Structure

- Brush Type

- Geometric
- Texture



- Granularity

- Connected
- Disconnected



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## Temporal Structure

- Synchronicity

- Absolute
- Relative



- Persistence

- Temporal
- Spatial



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## Behavior

- Mapping

- Projection
- Warping



- Animation

- Local
- Global



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## ▶ Visual Scores

- Interaction Dynamics
- Timeline Authoring

### ➔ Finite State Machine

- Graphic States
- Transitions



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## Graphic States

- Instancing Dynamic Shapes
  - (Motion Path, Parameters) + Graphics Program



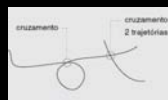
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## Transitions

- Events



Direction Change



Path Crossing

- Expressions

*(time < 10s & p.crossed)*

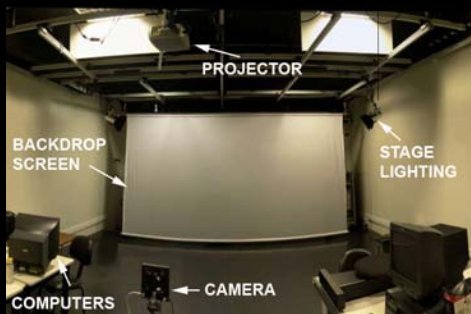
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# Unsquare Dance

- Experiment
  - Test the System
  - Video Production
- Art Piece (by Analivia Cordeiro)
  - Choreography
  - Performance

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## ▶ The Setup



- Studio for Computational Vision - VISGRAF

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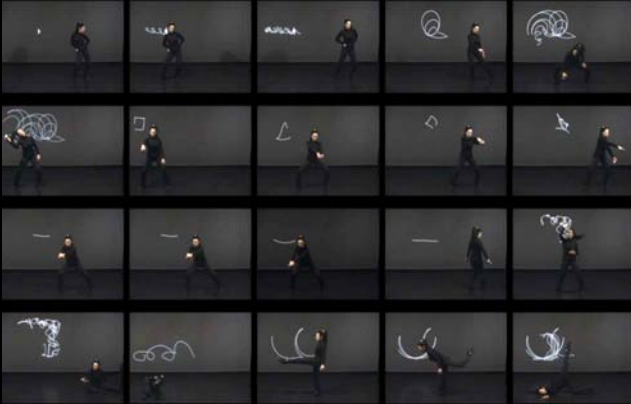
## ▶ The Plan



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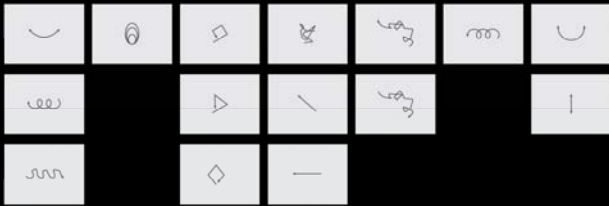
## ▶ The Choreography



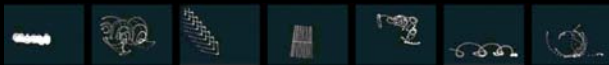
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## ▶ Visual Score I (Analivia)

### • Movements



### • States



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## ▶ The Performance

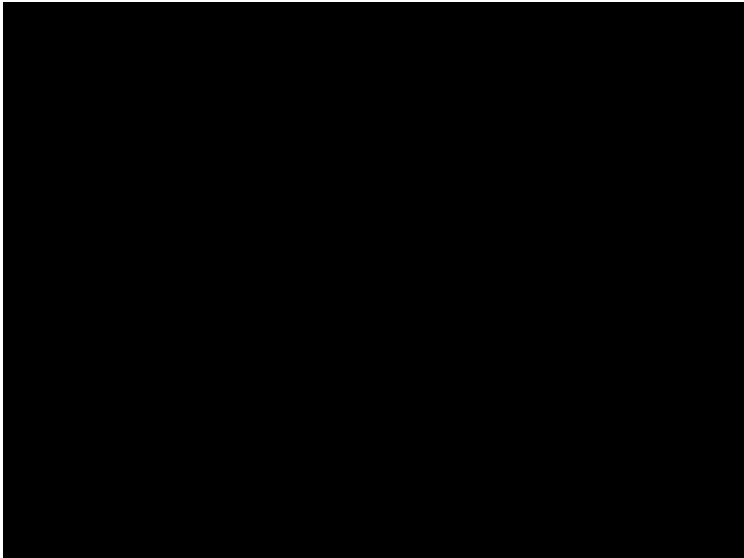


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▶ Video - Visual Score I

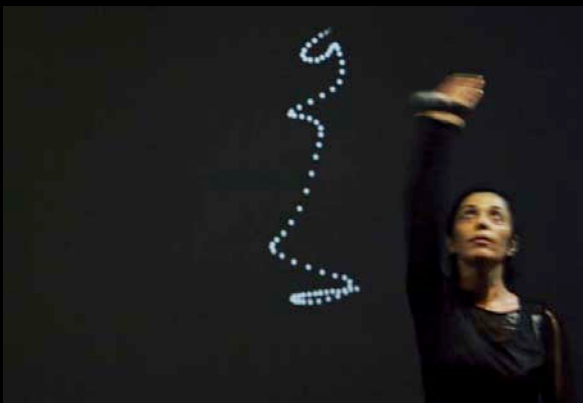


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▶ Visual Score II (Alice)



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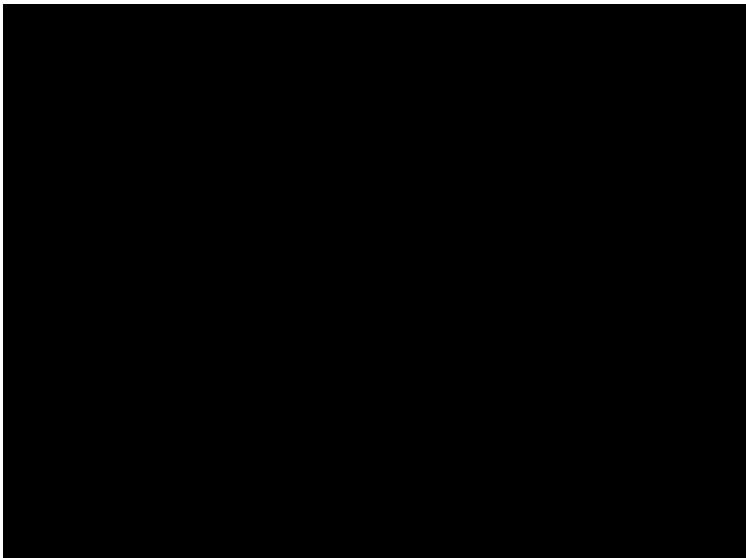
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## ▶ Behind the Scenes

- Making-Off



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## ► People



Analivia Cordeiro  
*Dance*



Alice Bodanzky  
*Design*



Luiz Velho  
*Direction*



Julio Lucio  
*Development*



Ilana Paterman  
*Editing*

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## Conclusions

- Rewarding Research
- Submissions
  - Eurographics John Lansdown Award
  - SIGGRAPH 2008
  - Computational Aesthetics
- Future Work
  - Lots! (don't get me started ;-)

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## To be continued...



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The End