Integrative-AI challenges in physically situated interactive systems

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Challenges with integrative-AI
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Managing complexity
programming models for parallel, coordinated computation

Time
Uncertainty & ML
Time
**Time**

**Time and streams as 1st order citizens**

```c
stream double f;
f=3; f=x*f-y;
persistence w/ historical access (e.g. f[-200ms]), sampling, transforms (e.g. f.Slope[-500ms:0ms])
```

**Latency-awareness**

synchronization and coordination primitives
meta-reasoning about time
Uncertainty & ML in integrative-AI systems

Software engineering & Uncertainty
- composability
- testing and maintenance
- versioning

ML & integrative-AI systems
- interactivity (with outside world or other components)
- blame assignment
- system-level optimization
Integrative-AI

Artificial Intelligence
Software Engineering
Machine Learning
Systems