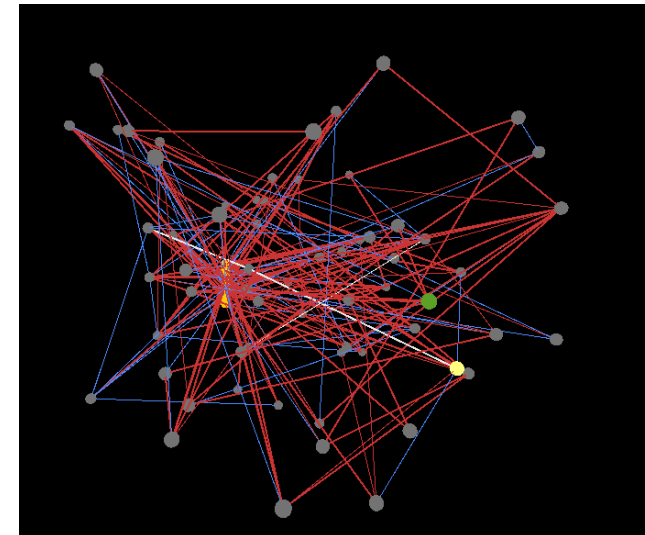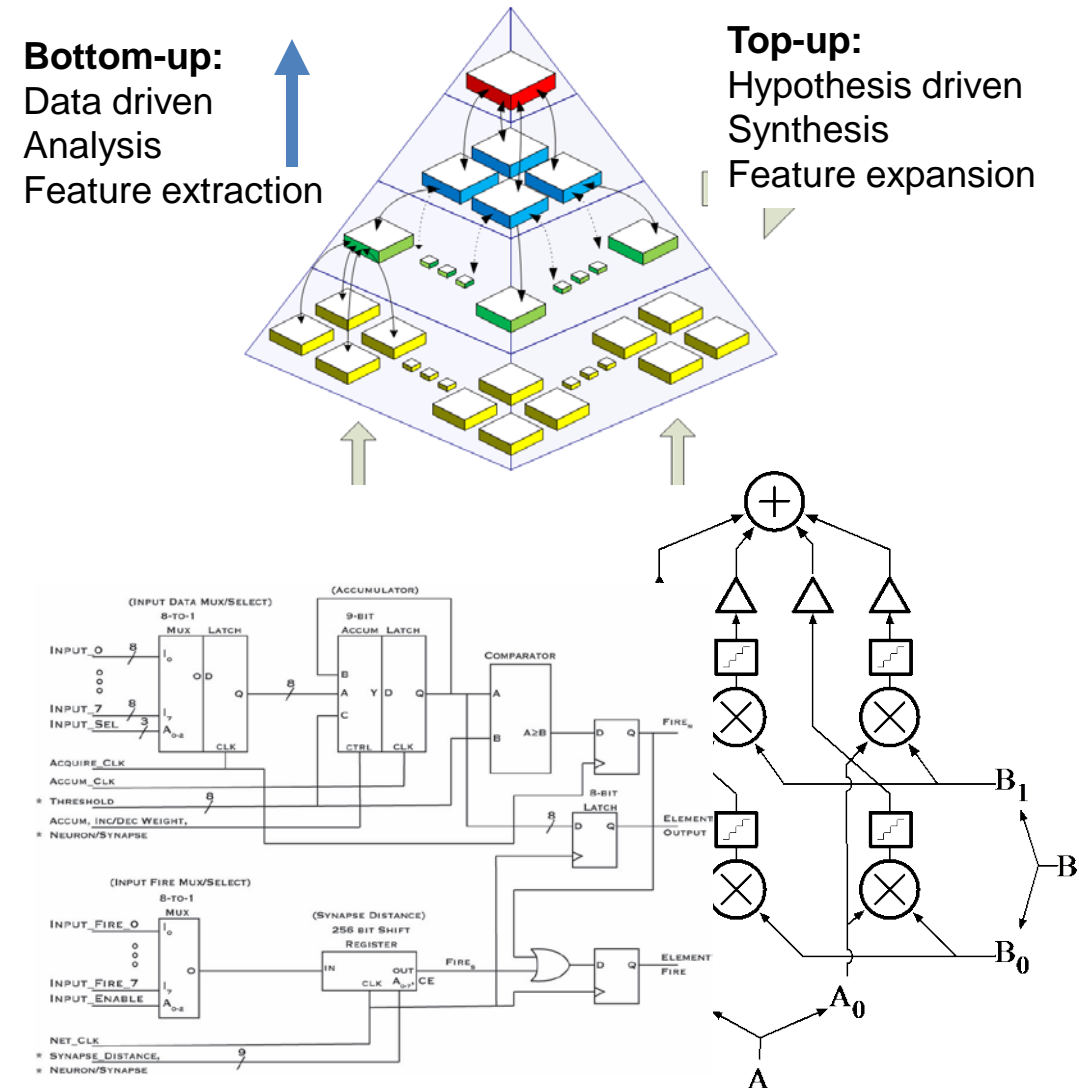University of Tennessee, Knoxville

- **Lead Investigator**: Jeremy Holleman

- **Current Team Members**: Itamar Arel, Doug Birdwell, Mark Dean

# Research Areas of Interest

- **DeSTIN Deep Learning Framework**:
  - Spatiotemporal pattern learning involves online clustering and feedback-based Bayesian inference
  - Combination of online clustering with feedback-based Bayesian inference
- **NIDA** Neuroscience-inspired dynamic architectures and evolutionary algorithms
- **Aggregating Resolution**: Combining low-resolution computational units to perform high-resolution systems

Bottom-up:
Data driven
Analysis
Feature extraction

Top-up:
Hypothesis driven
Synthesis
Feature expansion

Unique Qualifications and Capabilities

- **Bio-inspired deep learning architectures** with high efficiency and proven robustness to analog hardware implementation

- **Neuroscience-inspired Dynamic Architectures**: Spike-based computational systems designed through evolutionary algorithms

- **Error modeling** of non-boolean computational systems

- **Memristor-based** learning system design
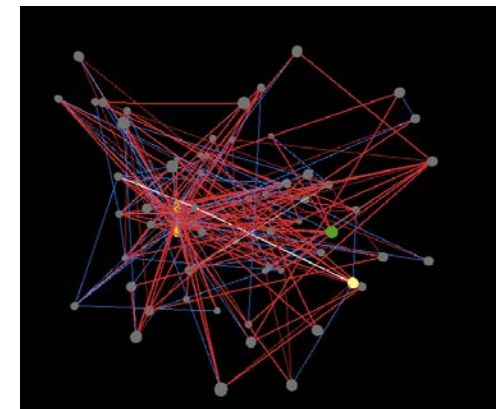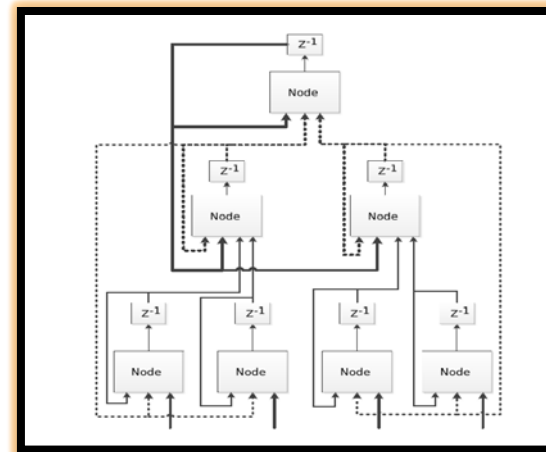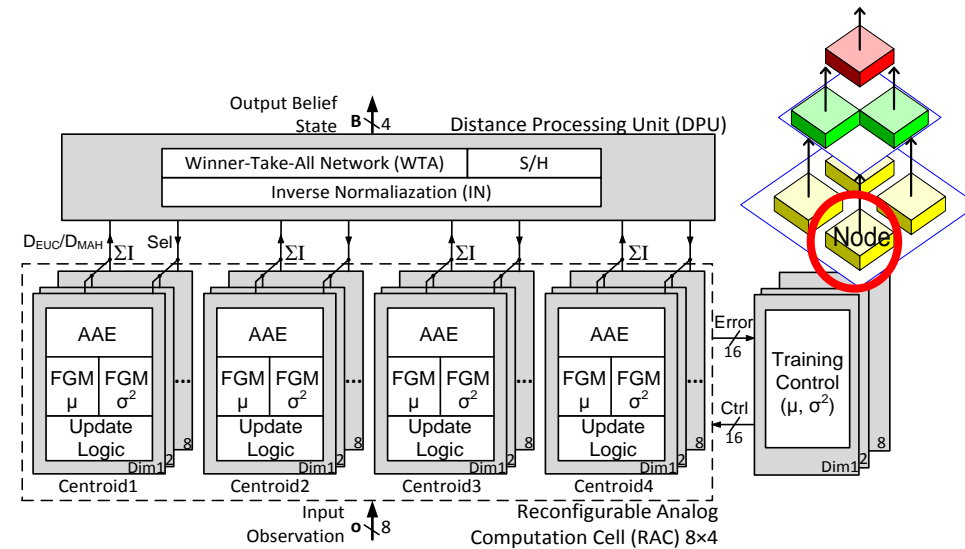
Teaming interests

- Seeking to join a research team with expertise in computational neuroscience, systems integration
- Utilize expertise of one or more UTK faculty members
  - **Itamar Arel**: High-performance machine intelligence and custom computing.
  - **Doug Birdwell**: Neuroscience-inspired dynamic architectures, evolutionary algorithms, dynamic systems, and high-performance data processing
  - **Mark Dean**: Digital design and architectures
  - **Garrett Rose**: Neuromorphic computing with memristors
  - **Jeremy Holleman** Low-power analog computational system, aggregate-resolution computation

Contact Information

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