Welcome to CRNCH Summit 2021!

Georgia Tech Center for Research into Novel Computing Hierarchies

Presented by: Tom Conte & Rich Vuduc
CRNCH Co-Directors
January 28-29, 2021

CRNCH in a nutshell

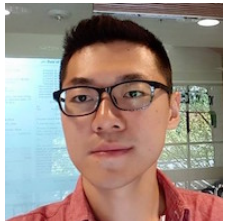
CRNCH is focused on extending computing design beyond traditional paradigms

- Encourages **revolutionary, long-term research** in areas such as neuromorphic, quantum, reversible and approximate computing to address computing challenges 10 to 20 years in the future.
- Comprises over 25 faculty across sciences, engineering, computing, and GTRI *(GT's applied research lab)*
- Tied with **IEEE's Rebooting Computing Initiative** for maximum impact
- Leads development of a **"Rogues Gallery,"** a place for non-conventional computer hardware to be used by students, faculty, and industry partners

New Initiative in 2020: The CRNCH Ph.D. Fellowships

Competitive one-semester seed grants for high-risk, CRNCH-y ideas!

Chunxing Yin (CSE):
"Tensorized neural networks for faster training and better co-design"



Alan Zhang (CS):
"Self-powered computational photodetectors based on organic semiconductor (OSC) devices."

Muliang Zhu (ECE):
"Cortex-inspired optical computing enabled by photonic metasurfaces."

Meet them at today's poster session — and help to sponsor the next Fellows!

Rogues Gallery: A Community Research Infrastructure for Post-Moore Computing

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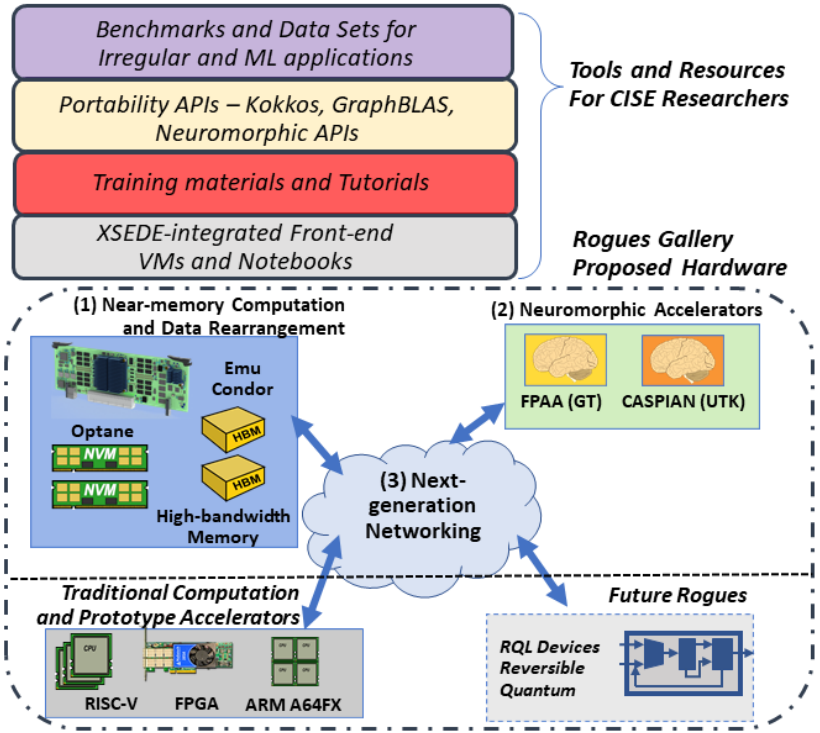

The Rogues Gallery is now an NSF funded post-Moore testbed for CISE researchers and the community

CNS-2016701, $1.3M over 3 years

Supports deploying:

-Rack-scale Lucata Pathfinder 16 node system

-Neuromorphic accelerators

-Smart networking and 5G equipment

-Backend infrastructure

This grant focuses on ***community engagement and post-Moore training***

See PI Jeff Young's talk today at 4 pm ET / 1 pm PT

Partner highlights in 2020

CRNCH is grateful to its partners for enabling new efforts, so thanks, y'all!

LUCATA

RG expansion, research, tutorials, personnel transfers

NORTHROP GRUMMAN

Novel computer architectures

Sandia National Laboratories

Architecture, in-network computing, solvers, graphs, tensors, programming models

Just a (pseudo)random sample — we welcome your continued and new engagements

Logistics

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CRNCH Virtual Summit 2021 Logistics

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CRNCH Summit 2021 Logistics

This document covers how to connect to the CRNCH Summit WebEx, use breakout rooms, and instructions for our poster breakout session. The Summit will run **1 - 6 PM ET Thursday, Jan. 28th**, and **12 - 5 PM ET Friday, Jan. 29th.**

Important Links

CRNCH Virtual Summit WebEx Link for both days:

https://gatech.webex.com/gatech/j.php?MTID=m5208ac61769185078c5474f6983fa236
Meeting ID: 180 786 0513

Thanks to the CRNCH Summit Crew

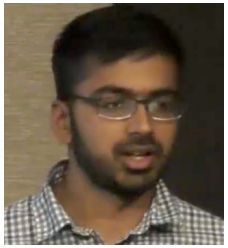
Georgia Tech Center for Research into Novel Computing Hierarchies

Ruthie Book

Matthew Whitlock

Chunxing Yin

Jeff Young



Anirudh Jain

And, of course, thanks to all of the speakers and attendees for thoughtful participation!