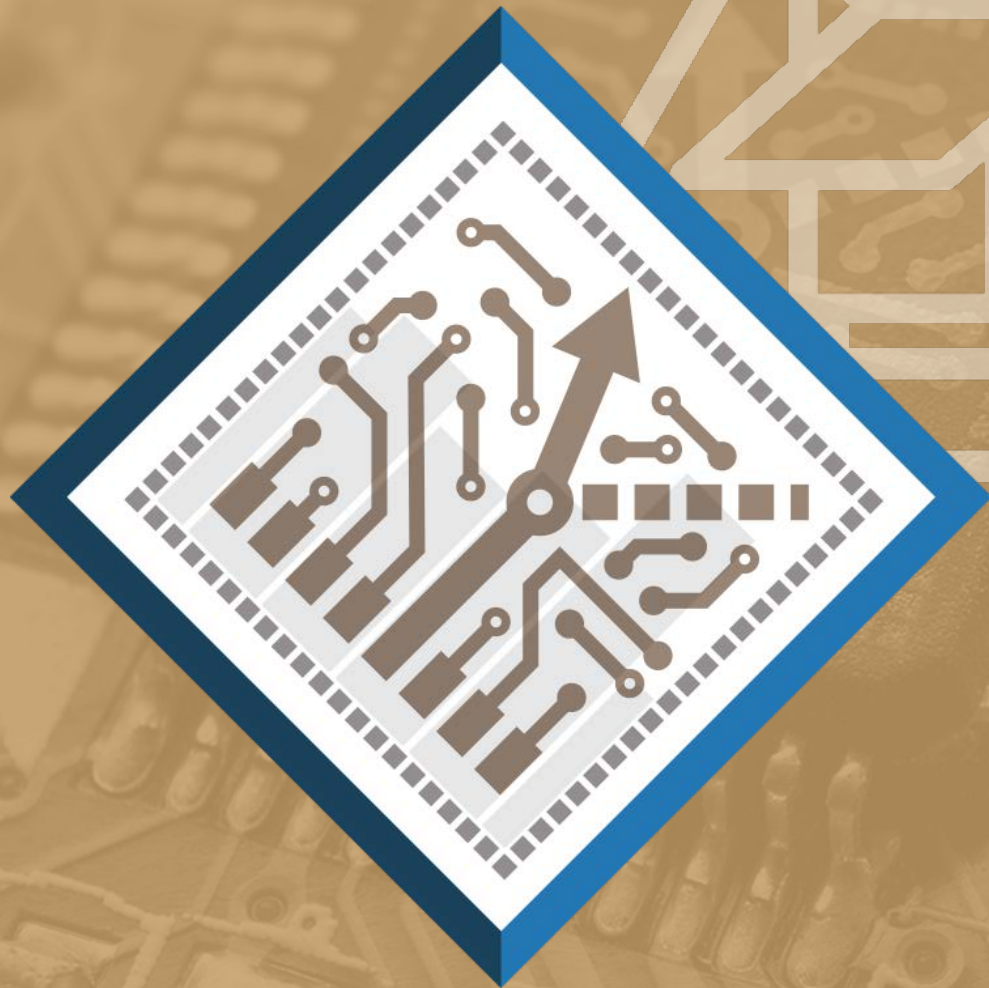




# YOUNG-KAI CHEN

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**PROGRAM MANAGER**  
DARPA/MTO

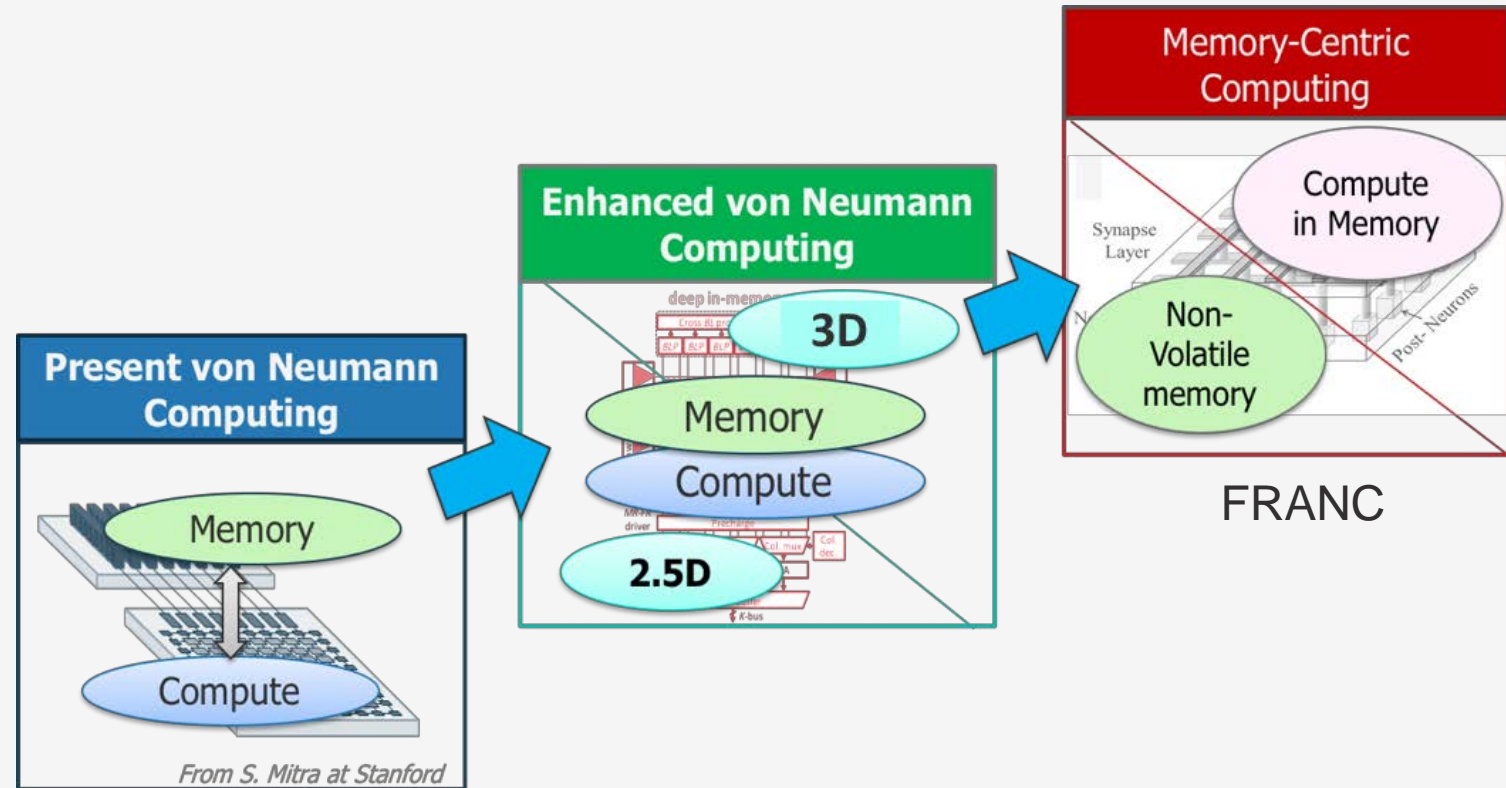


# FOUNDATIONS REQUIRED FOR NOVEL COMPUTE (FRANC)

# FRANC

## FOUNDATIONS REQUIRED FOR NOVEL COMPUTE

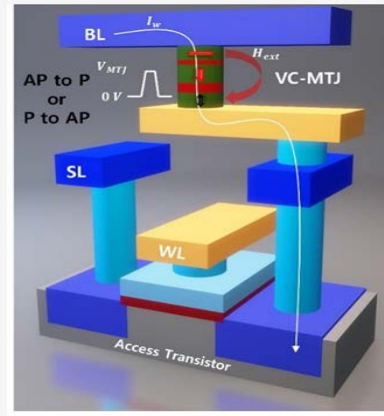
- Combine new materials, new devices, and new physical architectures to create revolutionary advances in computing



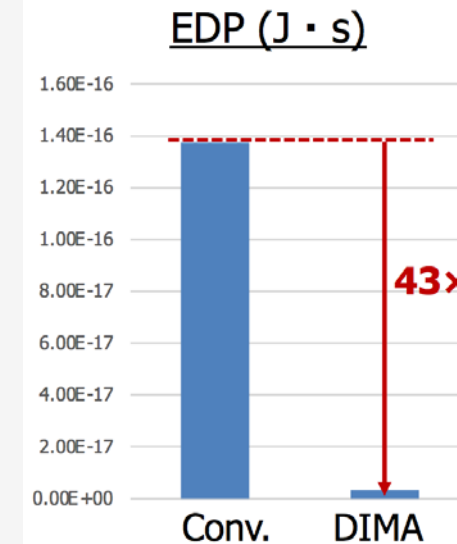
# FRANC

## PROGRAM HIGHLIGHTS

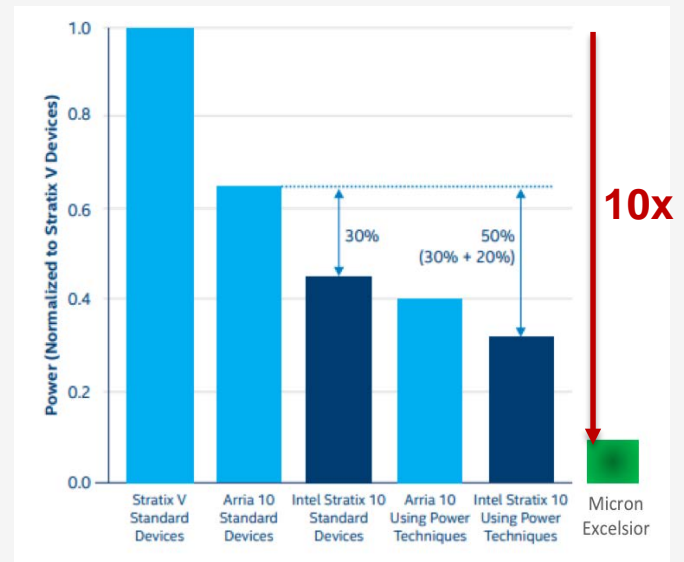
- UCLA:  
Smallest, lowest energy non-volatile memory
- UIUC:  
Deep-in memory architectures (DIMA)
- Micron:  
Excelsior near-memory compute



### Energy Delay Product (256-dimensional dot products)



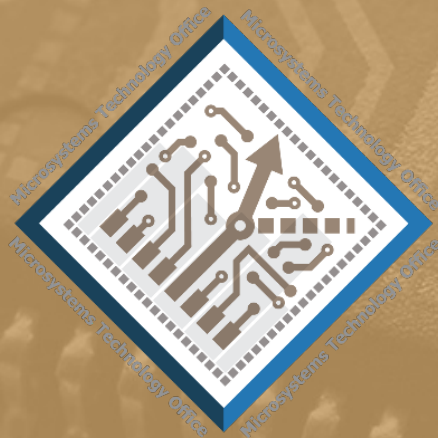
### Energy Reduction (Synthetic Aperture Radar)



# FRANC

## PERFORMERS

TA 2	<b>Applied Materials</b> <i>PI: David Thompson</i>	<i>Non-volatile, multi-state memory based on Mott effect</i>
	<b>University of Minnesota</b> <i>PI: Jian-Ping Wang</i>	<i>Ultra fast magnetic tunnel junction memory for in/near memory computing</i>
	<b>University of California Berkeley</b> <i>PI: Sayeef Salahuddin</i>	<i>Negative capacitance memory for artificial intelligence</i>
TA 1	<b>University of California at Los Angeles</b> <i>PI: Sudhakar Pamarti</i>	<i>Spintronic stochastic dataflow computing for low-energy classification</i>
	<b>Micron</b> <i>PI: Glen Edwards</i>	<i>Excelsior near-memory computing</i>
	<b>University of Illinois at U.C.</b> <i>PI: Naresh Shanbhag</i>	<i>Deep-in memory architectures using magnetic random access memory</i>



# **ERI** **ELECTRONICS** **RESURGENCE INITIATIVE**

## **S U M M I T**

**2019** | Detroit, MI | **July 15 - 17**