

A Dialogue of Two Frontiers: When Brain Meets AI

– The Impact of AI in Medical & Clinical Environment

Ruogu (Reanna) Fang, Ph.D.

Pruitt Family Endowed Associate Professor, BME, ECE, CISE

Director, Smart Medical Informatics Learning and Evaluation (SMILE) Lab

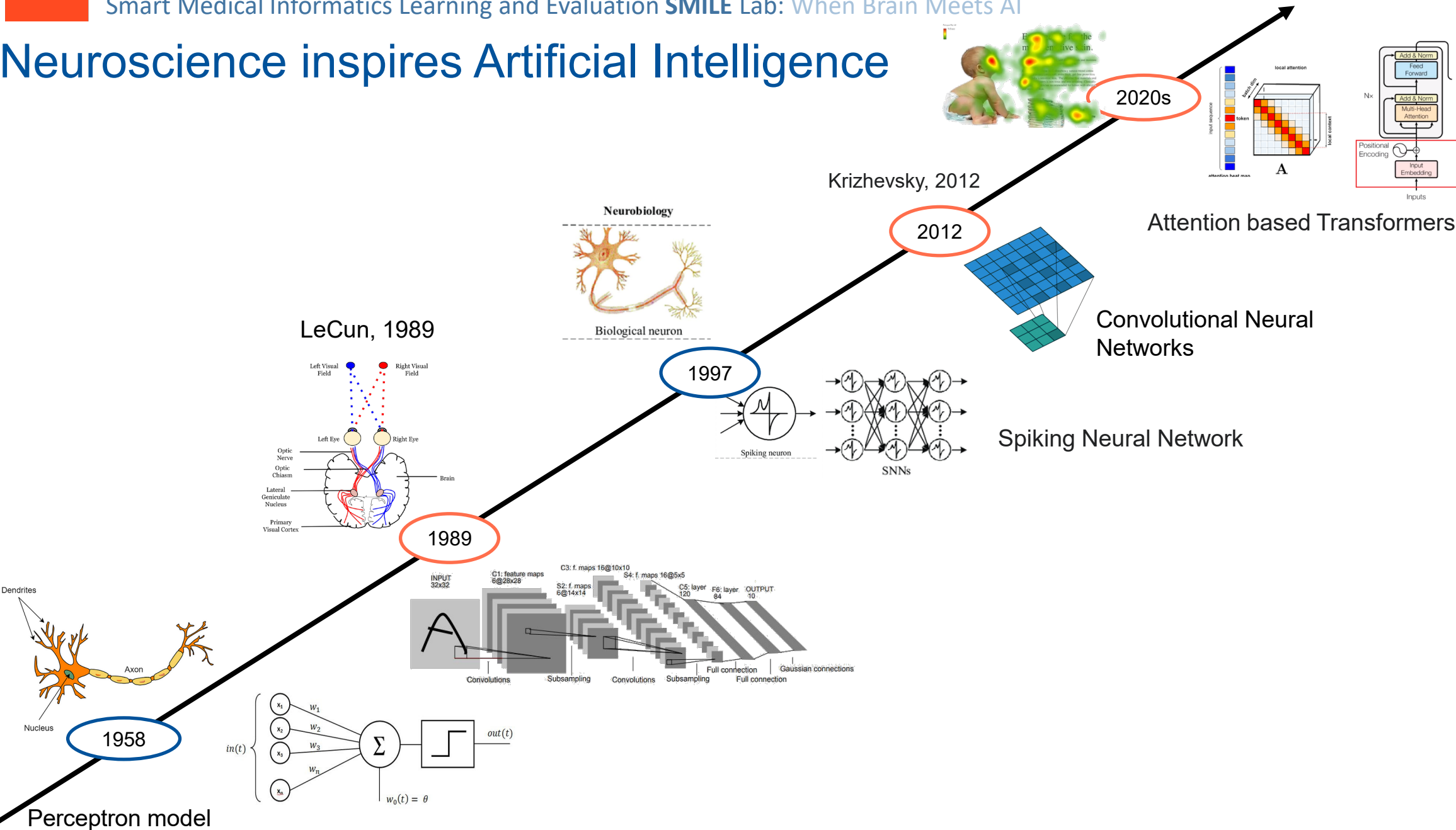
University of Florida

ruogu.fang@ufl.edu

Disclosure

- My research has been funded by NSF, NIH, AFRL, ORAU, NVIDIA, Meta, Oracle, McKnight Brain Research Foundation, University of Florida

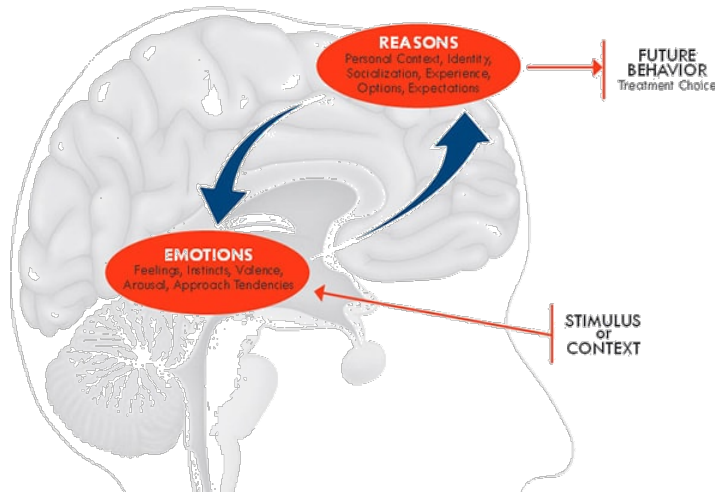
Neuroscience inspires Artificial Intelligence



- AI has been and is being inspired by human intelligence
- But there is a gap between today's expectation of what AI can do and what AI can really do

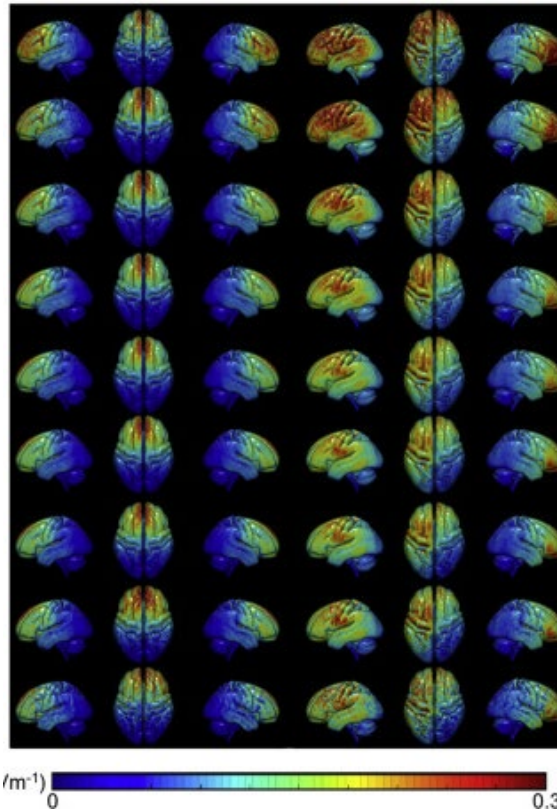
Gaps between Reality and Expectations of AI in Medicine

Reasoning, Emotion
Decision-making, Execution



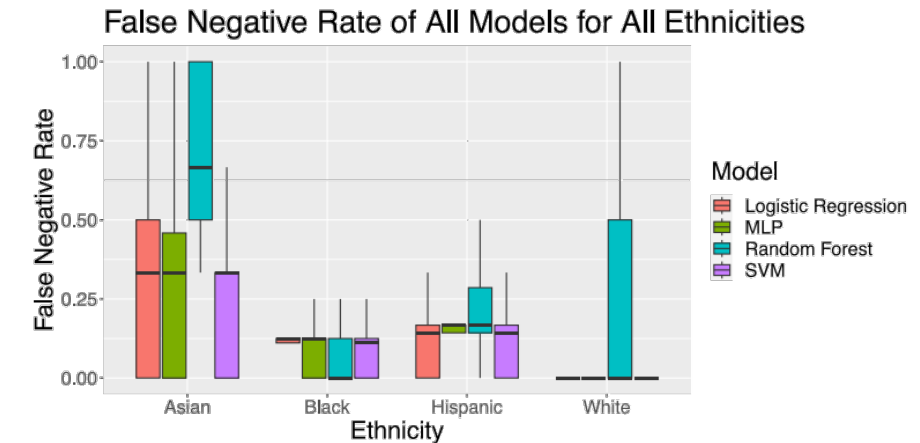
High-Level Cognition

Liu, Fang et al. 2021, 2024



Individuality

Albizu, Fang et al. 2023

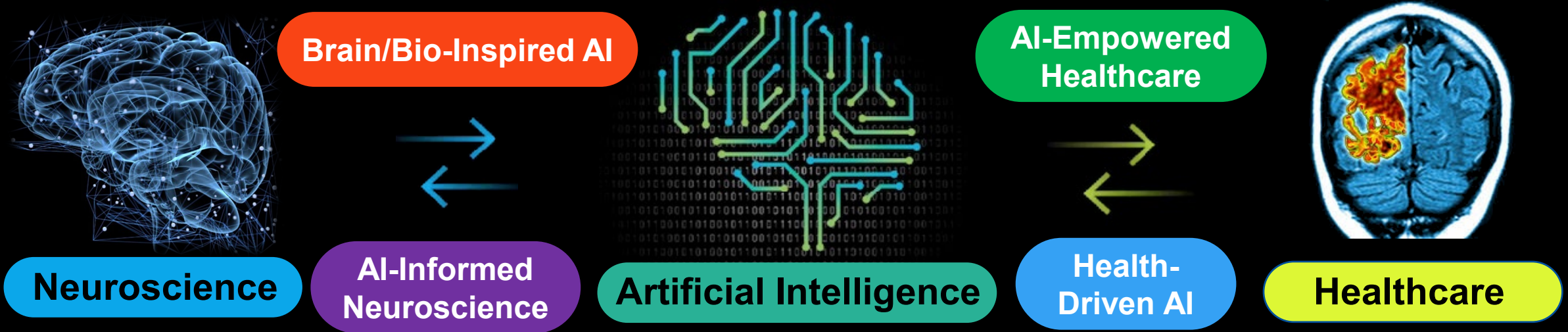


Bias and Disparity

Celeste, Fang et al. 2023

Take-home messages: To close the gaps, we could -

1. Integrating higher-level cognition into AI models to empower brain disorders diagnosis and intervention
2. Builds individuality into AI through a generalist model to make it more personalized while generalizable
3. Understand the sources and causes of bias and disparity and redefine fairness

Smart Medical Informatics Learning and Evaluation **SMILE** Lab: When Brain Meets AI**Takeaways: Funding agencies and policy makers -**

- Long-term continuous funding of neuroscience-inspired AI and AI-empowered brain health to maintain national AI leadership
- Identifying strategies to provide large-scale computing resources for academia AI research

Smart Medical Informatics Learning and Evaluation **SMILE** Lab: When Brain Meets AI**SMART MEDICAL INFORMATICS
LEARNING AND EVALUATION LAB**

J. CRAYTON PRUITT DEPARTMENT
OF BIOMEDICAL ENGINEERING
UNIVERSITY OF FLORIDA

Ruogu Fang

ruogu.fang@ufl.edu

<https://www.bme.ufl.edu/labs/fang/ruogu/>



@RuoguFang