

Agenda
 AI and Machine Learning SCINet Conference:
 Current Uses and Potential to Solve Complex Problems in Agriculture
 George Washington Carver Center GWCC 4-2223
 September 19-20, 2019, Beltsville, MD

Thursday, September 19

8:00	Opening remarks and logistics	Deb Peters, USDA ARS, Acting Chief Science Information Officer
8:15	Introduction to SCINet	Steve Kappes, USDA ARS, Associate Administrator, Beltsville, MD
8:30	Keynote: Harnessing AI to Transform Agricultural Research	Simon Liu, USDA ARS, Associate Administrator, Beltsville, MD
SESSION I. Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) in the ARS		
9:00	Overview of AI and ML in Agriculture	Jerry Hatfield, USDA ARS, National Laboratory for Agriculture and The Environment, Ames, IA
9:30	An AI Recommendation System for Agricultural Research	Debra Peters, USDA ARS, Jornada Experimental Range, Las Cruces, NM
9:50	break	
10:10	The toolbox for field-scale decision making	Ken Sudduth, USDA ARS, Cropping Systems and Water Quality Research, Columbia, MO
10:30	Big data for big country: optimization, monitoring, and predictive analytics in western rangelands	Brandon Bestelmeyer, USDA ARS, Jornada Experimental Range, Las Cruces, NM
10:50	Transforming Precision Sustainable Agriculture with AI/ML	Steven Mirsky, USDA ARS, Sustainable Agricultural Systems Lab, Beltsville, MD
11:10	Overview of methods and software	Adam Rivers, USDA ARS Agricultural Microbiomes Group, Gainesville, FL
11:40	Discussion: Why are you interested in AI for agriculture?	Moderator: Jerry Hatfield
12:00	Working Lunch and formation of discussion topics (participants purchase their own meals)	
1:30 – 3pm	BREAKOUT GROUPS: Topics from lunch mtg: how is the ARS currently using AI/ML/DL? Have these talks sparked interest in other ways these approaches could be used?	Moderators: Marlen Eve, Jerry Hatfield, Jeff Silverstein
3:00	Break	
SESSION II. Challenges and limitations with AI		
3:30	Deep learning (DL) in agriculture	Adam Rivers, USDA ARS Agricultural Microbiomes Group, Gainesville, FL
4:00	Ethics, Bias, & Security Issues	Anna Lenhart, Senior Consultant and Lead on AI Ethics, IBM Public Sector
5:00	Discussion	
5:30	Poster session	
6:30	Dinner on your own	

Friday, September 20

8:00	Opening Remarks and Summary of Day 1	
SESSION III. High Performance Computing (HPC) and AI/ML/DL in agricultural problems		
8:30	SCINet basics, introduction to SCINet resources w/training from Iowa State University (remote presentation)	Jim Coyle, Andrew Severin; Iowa State University High Performance Computing Group and USDA ARS SCINet Virtual Research Support Core (VRSC)
9:00	Coupling machine learning and crop modeling to improve prediction in agriculture	Sotirios V. Archontoulis, Iowa State University, Department of Agronomy, Ames, IA
9:30	Automated Indexing and Other Machine Learning Applications at the National Agricultural Library	Paul Wester, Director, National Agricultural Library, Beltsville, MD
10:00	Break	
10:30	The Future of Machine Learning in Nutrition Research	Danielle Lemay, USDA ARS, <u>Western Human Nutrition Research Center, Immunity and Disease Prevention Research</u> , Davis, CA
11:00	Discussion and Q/A with speakers	
12:00	Lunch (participants purchase their own meals)	
SESSION IV. Looking forward and completion of products		
1:00	Breakout groups: what is the unexplored potential for AI/ML/DL in the ARS? Topics based on, but not limited to, both days' talks plus own experience and needs.	Moderators: Marlen Eve, Jerry Hatfield, Jeff Silverstein
2:30	Break	
3:00	Plenary: develop outline of white paper/journal article (Perspectives on the role of AI in agriculture) with writing tasks, dates, and authors	
5:30	Closing Remarks and Collection of Participant Feedback	