SECOND ANNUAL

Artificial Intelligence and Machine Learning at OU

SYMPOSIUM 2019 | SEPT. 25–27

Oklahoma Memorial Union
University of Oklahoma
900 Asp Ave, Norman, OK 73019

Presented By

Gallogly College of Engineering, Mewbourne College of Earth and Energy,
College of Arts and Sciences, College of Atmospheric and
Geographic Sciences, Price College of Business and
the OU Health Sciences Center

Wednesday, Sept. 25
Tutorials and Predict-a-Thon

8 am **Registration**
Oklahoma Memorial Union Ballroom, 3rd floor

9-10 am **Introduction to Python for Data Analysis**
Oklahoma Memorial Union Ballroom, 3rd floor

10 am-noon **Introduction to Scikit-Learn and Pandas**
Oklahoma Memorial Union Ballroom, 3rd floor

Noon-12:30 pm **Lunch**
On your own

12:30-3:30 pm **Deep Learning and Convolutional Neural Network**
Rawl Engineering Practice Facility, Room 200, 2nd floor
Overflow: Oklahoma Memorial Union Heritage Room, 2nd floor

4-7 pm **Dataiku for Solving Prediction Problems**
Rawl Engineering Practice Facility, Room 200, 2nd floor

7-8 pm **PREDICT-A-THON LAUNCH**
Machine learning and data science competition
Rawl Engineering Practice Facility, Room 200, 2nd floor

Thursday, Sept. 26
Industry Day

8 am   **Registration**
Meacham Auditorium, Memorial Union, 2nd floor

9 am   **WELCOME AND GOALS**
Meacham Auditorium, Memorial Union, 2nd floor

Andrew H. Fagg
School of Computer Science
Institute for Biomedical Engineering, Science and Technology

John Antonio
Gallogly College of Engineering Interim Dean

Randa Shehab
Gallogly College of Engineering Associate Dean

Sridhar Radhakrishnan
School of Computer Science Director
Data Science Program Co-Director

Deepak Devegowda
Mewbourne College of Earth and Energy

Keith Tarter
OU Class of 1981

9:30 am-4:30 pm   **TALKS FROM INDUSTRY LEADERS**
Meacham Auditorium, 2nd floor

9:30 am   **CLOSING THE GAP**
Discovering the Art in Data Science
Business Impact at American Fidelity
Mark Nance, VP and Chief Data Officer, American Fidelity

10 am   **HOW TO SOLVE PROBLEMS**
Lessons Learned from being a Data Scientist
Megan Oftedal, Senior Data Scientist, American Fidelity

10:30 am   **Predictive Analytics in Well Operations**
Vikram Jayaram, Senior Manager for Data Science and Advanced Analytics, Pioneer Natural

11 am   **Taking Baseball's Lead to Oil and Gas –**
Data Analytics is Changing the Game for the Oil Field
Trey Lowe, Vice President of Technology, Devon Energy

11:30 am-12:15 pm   INDUSTRY PANEL

AI is a Team Sport

David Clausen *Lead Data Architect, Enable Midstream Partners*

Mark Nance *VP and Chief Data Officer, American Fidelity*

Megan Oftedal *Senior Data Scientist, American Fidelity*

Panel Facilitator: Keith Tarter

DATA SCIENCE CHALLENGES
Bring your own laptops!

5:30-8 pm

Students
Predict-a-thon Wrap-Up
*OMU Associates Room,
3rd floor*

Industry Representatives
Corporate Industry Day Challenge
OMU Scholars Room, 3rd floor

12:15-1:30 pm   LUNCH: SPONSOR TALKS
Oklahoma Memorial Union Courtyard, 1st floor

1:30-4:30 pm   TECHNICAL TALKS: INDUSTRY PRESENTATIONS
Parallel Talk Tracks

	TRACK ONE *OMU, Scholars Room, 3rd floor*	TRACK TWO *OMU, Regents/Associates Room, 3rd floor*
1:30 pm	**How Cloud Computing Will Change Big Data, AI and ML** **Michael Pankaj Agarwal** *Hertz Corp*	**Leveraging Artificial Intelligence to Improve Farm Productivity and Profitability** **Pavan K. Vankadaru** *CIO, RandomTrees*
2 pm	**Put AI to Work** **Will Nowak** *Dataiku*	**Democratizing AI A Developers Perspective** **Sree Ram** *Microsoft*
2:30 pm	**A Day in the Life of Data** **Nested Life Cycles and Data Quality** **David Clausen** *Lead Data Architect, Enable Midstream Partners*	**Got Milk? Modeling a Dairy Allergy: Oral Immunotherapy and the Immune Response** **Kelley France** *American Fidelity*
3 pm	**ML with Graph for a Recommendation Engine** **Daniel M. Farrell** *Enterprise Solution Architect, DataStax*	**Buy Till You Die: Predicting Attrition in Non-Contractual Customers** **Jessica Lee** *Sonic*
3:30 pm	**AutoML: What It Can and Can't Do to Prove Value** **David Gillen** *Precocity*	**Classifying Thin Section Cuttings Using Deep Learning** **David Robinson** *Devon Energy*
4 pm	**Detecting Bias with SHAP: What do Developer Salaries Tell us about the Gender Pay Gap?** **Sean Owen** *Databrick*	**Model Interpretability and Building User Trust in Machine Learning Systems** **Graham Ganssle** *Expero*

4:30-5:30 pm   RECEPTION *Beaird Lounge, Memorial Union*

Friday, Sept. 27
Research Day

Research Day is dedicated to facilitating conversations among faculty, researchers, staff and students on the OU campuses and affiliated research organizations.

8 am   **Registration**
            Meacham Auditorium, Memorial Union, 2nd floor

9 am   **WELCOME AND GOALS**
            Meacham Auditorium, 2nd floor

            Andrew H. Fagg
            School of Computer Science
            Institute for Biomedical Engineering, Science and Technology

            Sridhar Radhakrishnan
            School of Computer Science Director
            Data Science Program Co-Director

9:20 am   **Machine Learning Applications for Subsurface Imaging in Geophysics**
            Heather Bedle
            School of Geosciences, University of Oklahoma
            Co-authors: Julian Chenin, Karelia La Marca Molina, David Lubos-Robles,
            Roberto Clairmont, Carl Buist

9:40 am   **Making the Black Box More Transparent: Understanding the Physical**
            Implications of Machine Learning
            Amy McGovern
            School of Computer Science, University of Oklahoma
            Co-authors: David J. Gagne II, Ryan Lagerquist, Kim Elmore, and Eli Jergensen

10 am   **Weather Radar Quantitative Precipitation Estimates from a Convolutional**
            Neural Network
            Micheal Simpson
            Cooperative Institute for Mesoscale Meteorological Studies University
            of Oklahoma, National Severe Storms Laboratory, National Oceanic and
            Atmospheric Administration
            Co-authors: Jian Zhang, Kenneth Howard, Lin Tang

10:20 am   **Dust Detection Using Satellite Data and Machine Learning Methods**
            Changjie Cai
            Occupational and Environmental Health
            Hudson College of Public Health, University of Oklahoma
            Co-authors: Jangho Lee, Yingxi Shi, Camille Zerfas, Jianwu Wang, Zhibo
            Zhang

10:40 am	Break

11 am   Machine Learning and Quasars: Recent Results and New Directions
Karen Leighly
Homer L. Dodge Department of Physics and Astronomy,
University of Oklahoma
Co-authors: Donald Terndrup, Sarah Gallaghe, Gordon Richards, Hyunseop
Choi, Collin Dabbieri, Collin McLeod, Ryan Hazlett, Alex Kerr

11:20 am   Machine Learning Thermal Transport for Interface Design
Alexander Kerr
Homer L. Dodge Department of Physics and Astronomy,
University of Oklahoma
Co-authors: Kieran Mullen

11:40 am   Visual Scanpath Approximation For Training Enhancement:
A Spatio-Temporal Clustering Approach
Saptarshi Mandal
Industrial and Systems Engineering, University of Oklahoma
Co-authors: Ziho Kang

Noon   On Adversarial Examples and Misclassification
Dimitris Diochnos
School of Computer Science, University of Oklahoma
Co-authors: Saeed Mahloujifar and Mohammad Mahmoody

12:20 pm   **Poster/Demonstration Session and Lunch**
Beaird Lounge, Oklahoma Memorial Union, 2nd floor

1:45 pm   PANEL AI/ML Resources at OU: Current Capabilities and Needs
Meacham Auditorium, Oklahoma Memorial Union, 2nd floor
PANELISTS
Andrew Fagg, Computer Science
Tara Carlisle, University of Oklahoma Libraries
Henry Neeman, OU Supercomputing, Center for Education and Research
Chongle Pan, Computer Science, Microbiology and Plant Biology
Kim Elmore, Cooperative Institute for Mesoscale Meteorological Studies

2:45-4:45pm   **NEW PROJECT BRAINSTORMING PANELS**

	TRACK ONE *Meacham Auditorium, 2nd floor*	TRACK TWO *Rawl Engineering Practice Facility,* *Room 200*
2:45 pm	Aspects of Robustness in Machine Learning and Data Mining PANELISTS **Dimitris Diochnos**, Computer Science **Christan Grant**, Computer Science **Le Gruenwald**, Computer Science **Theodore Trafalis**, Industrial Systems Engineering	Application of AI/ML in Biomedical and Clinical Informatics PANELISTS **Chongle Pan,** Computer Science, Microbiology and Plant Biology **Dee Wu,** Radiological Sciences **Franklin Hays,** Biochemistry & Molecular Biology **Chris Williams,** OU Health Sciences

3:45 pm	Machine Learning and Transportation PANELISTS	Using AI/ML to Model Neuromotor Behavior in Large Data Sets PANELISTS
	Jeremy Planteen, Strategic Asset and Performance Management Division Oklahoma Department of Transportation	Andrew Fagg, Computer Science
	Musharraf Zaman, Civil Engineering and Environmental Science, Southern Plains Transportation Center	Thubi Kolobe, Rehabilitation Sciences Hongwu Wang, Rehabilitation Sciences
	Dean Hougen, Computer Science	Carol Dionne, Rehabilitation Sciences Masoom Desai, Neurology

4:45 pm   **Symposium Concludes**

Organizing Committee

Andrew H. Fagg, Computer Science

Dimitris Diochnos, Computer Science

Christan Grant, Computer Science

Franklin Hays, Biochemistry and Molecular Biology, OU Health Sciences Center

Dean Hougen, Computer Science

Chongle Pan, Computer Science and Microbiology

Amy McGovern, Computer Science

Siddharth Misra, Petroleum & Geological Engineering

Charles Nicholson, Industrial Systems Engineering

Dee Wu, Radiological Sciences, OU Health Sciences Center
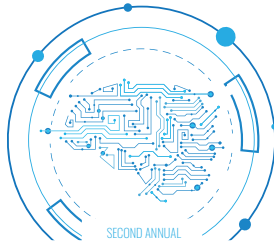
Keith Tarter, OU Class of 1981

Thank you for all the support and advice as we organized this symposium.

Karen Kelly

Stephanie Buettner-Wilkins

Margarita Lopez

Marilyn L. Korhonen

Sponsors

A special thank you to our sponsors for their support which makes possible the execution of this robust symposium and provides multiple scholarships to deserving students.

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SYMPOSIUM SPEAKERS
ou.edu/coe/ai-ml/program/speakers

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Invitation in your email or ask at the registration desk

REGISTER YOUR PREDICT-A-THON TEAM
Corporate Guests: bit.ly/OU19Predict-A-Thon
Students: bit.ly/19Predict-A-Thon

FOR MORE INFORMATION
ou.edu/coe/ai-ml

Public WiFi is available at:
OUGuest