

Yunxiang (Leo) Liu

Curriculum Vitae

☎ (720)725-9148
✉ Yunxiang.Liu@colorado.edu

Education

- 2017 - present **University of Colorado Boulder, Boulder.**
PhD in aerospace engineering, Smead Department of Aerospace Engineering Sciences
Supervisor: Prof. Jade Morton
GPA: **4.00**/4.00
- 2013 – 2015 **Nanyang Technological University, Singapore.**
Master of Engineering in wireless communication, School of EEE
Supervisor: Prof. Yongliang Guan & Prof. Dmitriy Garmatyuk
Thesis: *Narrowband Radar System for Indoor Doorway Detection.*
GPA: **4.67**/5.00
- 2009 – 2013 **University of Electronic Science and Technology of China, Chengdu, P.R.China.**
Bachelor of Engineering in wireless communication, Yingcai Honors College
Supervisor: Prof. Gang Wu & Prof. Yongliang Guan
Thesis: *SC-FDMA Frequency Domain Oversampling MMSE Equalizer.*
GPA: **3.93**/4.00

Research Experience

- 2019 - present **Application of Deep Learning to High Latitude Scintillation Forecast,**
supervised by Prof. Jade Morton.
Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder
- 2019 - present **Automatic Detection of Ionospheric Scintillation-like GNSS Satellite Oscillator Anomaly Using a Machine Learning Algorithm,**
supervised by Prof. Jade Morton.
Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder
- 2018 - 2019 **Classification on Ionospheric Scintillation and Interference Using a Machine Learning Algorithm,**
supervised by Prof. Jade Morton.
Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder
- 2017 - 2019 **Application of Machine Learning to GNSS-Reflectometry Wind Speed Retrieval,**
supervised by Prof. Jade Morton.
Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder

- August 2017 – **Application of Machine Learning to Characterization of Ionospheric Scintillation**,
present supervised by Prof. Jade Morton.
Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder
- 2016 - 2017 **Inverse Modeling on Engine Design**,
supervised by Prof. Sinno Jialin Pan.
Rolls-Royce@NTU Corporate Lab, Nanyang Technological University
- 2015 - 2016 **Convolutional Neural Network on Graphs for Android Malware Detection**,
supervised by Prof. Sinno Jialin Pan.
Computational Intelligence Lab, School of Computer Science and Engineering, Nanyang Technological University

Experience

Work

- Aug 2017 – **Graduate Research Assistant**,
present supervised by Prof. Jade Morton .
University of Colorado Boulder
- Sep 2015 – **Research Associate in machine learning**,
May 2017 supervised by Prof. Sinno Jialin Pan .
Nanyang Technological University
- July 2012 – **Research Assistant in wireless communication**,
May 2013 supervised by Prof. Yongliang Guan & Prof. Dmitriy Garmatyuk.
Nanyang Technological University

Workshops

- September 2018 **Climate Informatics**, Boulder, CO, USA.
- July 2018 **Incoherent Scatter Radar Summer School**, Boston, MA, USA.

Journal Papers

- 2019 Y. Liu, Y. Morton, “Automatic detection of ionospheric scintillation-like GNSS satellite oscillator anomaly using a machine learning algorithm,” *submitted to NAVIGATION, Journal of The Institute of Navigation*, 2019.
- 2019 Y. Liu, I. Collett, Y. Morton, “Application of neural network to GNSS-R wind speed retrieval,” *IEEE Transactions on Geoscience and Remote Sensing*, 2019.

Conference Papers

- 2020 Y. Liu, Y. Morton, “Machine Learning-based Automatic Detection and Characterization of GNSS Satellite Clock Anomaly Using Dual Frequency Signals and/or Low Rate Data,” *Proceeding of the ION ITM*, San Diego, California, USA, January 2020.
- 2019 Y. Liu, Y. Morton, “Automatic detection of ionospheric scintillation-like GNSS satellite oscillator anomaly using a machine learning algorithm,” *Proceeding of the ION GNSS+*, Miami, FL, USA, September 2019.
- 2019 Y. Liu, J. Wang, I. Collett, Y. Morton, “A machine learning framework for real GNSS-R wind speed retrieval,” *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, July 2019.

- 2018 Y. Liu, I. Collett, Y. Morton, S. Hrbek, D. Akos, "Mountaintop ocean reflectometry with dual frequency GPS signals: experiment and preliminary results," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Valencia, Spain, July 2018.
- 2018 Y. Liu, Y. Morton, and Y. Jiao, "Application of machine learning to the characterization of GPS L1 ionospheric amplitude scintillation," *Proceeding of the ION PLANS*, Monterey, USA, April 2018.
- 2016 Y. Liu, Y. Guan, D. Garmatyuk, and F. Quitin, "Improved exit path identification with indoor USRP-based radar system," *Proceedings of the ION PNT*, Hawaii, USA, April 2015.
- 2014 Y. Liu, Y. Guan, D. Garmatyuk, and Y. Morton, "USRP-based OFDM radar systems for doorway detection," *IEEE Radar Conference*, Cincinnati, OH, USA, May 2014.

Presentations

- 2019 Y. Liu, Y. Morton, "Automatic detection of ionospheric scintillation-like GNSS satellite oscillator anomaly using a machine learning Algorithm," *ION GNSS+*, Miami, FL, USA, September 2019.
- 2019 Y. Liu, "Application of neural network to GNSS-R wind speed retrieval," *Guest Lecture (ASEN 6519: GNSS for remote sensing)*, University of Colorado Boulder, Boulder, CO, USA, April 2019.
- 2018 Y. Liu, "Machine learning for GNSS remote sensing applications," *Stanford PNT symposium*, Stanford, CA, USA, November 2018.
- 2018 Y. Liu, Y. Morton, and Y. Jiao, "Application of machine learning to the characterization of GPS L1 ionospheric amplitude scintillation," *ION PLANS*, Monterey, USA, April 2018.

Posters

- 2019 Y. Liu, J. Wang, I. Collett, and Y. Morton, "A machine learning framework for real GNSS-R wind speed retrieval," July 2019, *IEEE International Geoscience and Remote Sensing Symposium*, Yokohama, Japan.
- 2019 Y. Liu, I. Collett, Y. Morton "Machine learning algorithm for ocean wind speed retrieval," April 2019, *Consortium of Colorado and Ohio Universities on Navigation and Timing (COUNT) workshop*, Columbus, OH, USA.
- 2019 Y. Liu, Y. Morton "Machine learning for GNSS anomaly detection and classification," April 2019, *Consortium of Colorado and Ohio Universities on Navigation and Timing (COUNT) workshop*, Columbus, OH, USA.
- 2018 Y. Liu, I. Collett, Y. Morton, S. Hrbek, D. Akos, "Mountaintop ocean reflectometry with dual frequency GPS signals: experiment and preliminary results," July 2018, *IEEE International Geoscience and Remote Sensing Symposium*, Valencia, Spain.
- 2018 Y. Liu, Y. Morton, Y. Jiao, "Application of machine learning to characterization of GPS L1 ionospheric amplitude scintillation," June 2018, *Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR)*, Santa Fe, NM, USA.
- 2018 Y. Liu, Y. Jiao, Y. Morton "Machine learning algorithm for ionospheric activities detection and classification," April 2018, *Consortium of Colorado and Ohio Universities on Navigation and Timing (COUNT) workshop*, Columbus, OH, USA.
- 2018 Y. Liu, I. Collett, Y. Morton "Machine learning algorithm for ocean wind speed retrieval," April 2018, *Consortium of Colorado and Ohio Universities on Navigation and Timing (COUNT) workshop*, Columbus, OH, USA.

Service

- 2018-2019 **Publication Reviews.**
- Paper in *GPS Solutions*.
 - Paper in *Astrophysics and Space Science*
- 2015-2017 **Vice Secretary-General**, *University of Electronic Science and Technology of China Singapore Alumni*.
- 2014-2015 **Committee Member**, *Intelligent Transport Society (ITS) Singapore Student Branch*.
- 2014-2016 **Committee Member**, *Graduate Student Council, Nanyang Technological University*.
- 2012 **Teaching Assistant**, *University of Electronic Science and Technology of China*.

Awards and Recognition

- 2017 **Departmental Fellowship**, *Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder*.
- 2016 **Invitation to UESTC 60th Anniversary Celebration as an Honor Alumni**, *Yingcai Honors College, University of Electronic Science and Technology of China*.
- 2015-2016 **Outstanding Individual of UESTC Alumni Association**, *University of Electronic Science and Technology of China*.
- 2013-2014 **Departmental Fellowship**, *School of EEE, Nanyang Technological University*.
- 2009-2012 **Second-class People's Scholarship**, *University of Electronic Science and Technology of China*.

Skills

Programming C/C++, MATLAB, Python, Java

Typesetting L^AT_EX

Language English, Chinese (native)

Version Gitlab

Control