Jaron Ellingson
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Education

- **M.S. Mechanical Engineering** — Expected Graduation: April 2020
  Brigham Young University; GPA: 3.70 — *Provo, Utah*
  - **Relevant Classes**: Linear System Theory, Control Systems, Robotic Vision, Math of Signals and Systems, Deep Learning, Robotics, Flight Dynamics, Algorithm Design & Analysis, Advanced Programming, Mechatronics
  - **Relevant Technology Used**: ROS, C++, Python, Tensorflow, Keras, Pytorch, Matlab
- **B.S. Mechanical Engineering** — April 2018
  Brigham Young University; Minors is Computer Science and Math; GPA: 3.89 — *Provo, Utah*

Research Projects

- **Project Lead** — July 2017 - Present
  Deep Remote Control — *Provo, Utah*
  - **State Estimator and Controller**: Researched and implemented a method for third-person estimation of unmanned aerial vehicles using a particle filter and deep learning. Currently working on complete autonomous control of vehicle.
  - **Hardware Integration**: Validation testing of autonomous flight controller in motion capture room along with testing on hardware outdoors.
  - **Funding Proposals**: Wrote proposals for undergraduate funding through BYU library. Currently have two undergraduates working under me.
- **Autonomous Navigation Software Developer** — Aug 2017 - June 2018
  Mars Rover University Challenge — *Provo, Utah*
  - **Visual Tracking**: Researched innovative navigation and tracking software which included deep neural classification. Implemented an autonomous system onto a rover.
  - **Task Lead**: Organized efforts to make rover completely autonomous, complete with accurate rover position estimations and obstacle avoidance.

Work Experience

- **Research Assistant** — Aug 2016 - Present
  MAGICC Lab & XDL Lab, Brigham Young University — *Provo, Utah*
  - **Vehicle-2-Vehicle Communications**: Researched drone communications for sense and avoid situations and optimizing flight paths for unmanned aerial vehicles.
  - **Computer Vision Applications**: Developed vibrational mode shape identification software using machine learning as well as other computer vision techniques.
  - **Research Papers**: Presented at IMAC 2018 conference.
- **Aerial Radar Research Intern** — June 2018 - Aug 2018
  MIT Lincoln Laboratory — *Lexington, MA*
  - **Target Classification**: Implemented several deep learning architectures for video classification. Long-short term memory cells, 3D nets, transfer learning, etc.
  - **Analytical and Research Contributions**: Contributed to the research process through weekly meetings and presented a final debriefing to demonstrate research and recommend appropriate future research.
  - **Innovation**: Took a broad topic and came up with concrete applications.

Publications

Ellingson, Jaron, Gary Ellingson, and Tim McLain. "Deep RC: Enabling Remote Control through Deep Learning." 2019 International Conference on Unmanned Aircraft Systems (ICUAS). IEEE, 2019.

Anderson, Brady, et al. "Networked Radar Systems for Cooperative Tracking of UAVs." 2019 International Conference on Unmanned Aircraft Systems (ICUAS). IEEE, 2019.

La, Alex, John Salmon, and Jaron Ellingson. "Identifying Mode Shapes of Turbo-Machinery Blades Using Principal Component Analysis and Support Vector Machines." Structural Health Monitoring, Photogrammetry & DIC, Volume 6. Springer, Cham, 2019. 23-26.