

# Jia Wen Lee



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<https://jiawenl.com>

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## Career Attributes

- Enthusiastic about engaging in challenging, novel problems that do not have a defined approach.
- In-depth knowledge of data wrangling and data analysis.
- Fast independent learner, able to quickly grasp technical domain-related knowledge with minimum supervision.
- Data-driven problem solver, analyze small scale test data and comparing results with field validation.
- Practical programming skills in MATLAB, Simulink, Python, and C++.
- Self-motivated with the ability to handle multiple tasks responsibly and efficiently with minimum supervision.
- Self-starter; takes initiative to learn new skills, seek tasks, suggest and shepherd improvements in any process.
- Willing to work long hours to exceed job expectations, currently put in an average of 60-70 hour work weeks.
- Excellent communicator:
  - Able to communicate vertically and horizontally across academic structure.
  - Teach engineering concepts such as PID controls to high school students.
  - Participate regularly in pitching competitions.
  - Frequent presentation of research progress to industrial sponsors.

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## Education:

Bachelor of Agricultural Engineering- Iowa State University: CGPA - 3.97

Graduated: Fall 2018

Masters of Science in Agriculture Engineering: CGPA - 4.0

Expected: Spring 2020

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## Work Experience:

### ***Iowa State University - Graduate Research Assistant***

May 2018- Present

- Research and develop automation solutions for agriculture tillage.
- Log, process, clean and merge LiDAR data with GPS data into manageable point cloud and perform post-processing data analysis to assess the viability of sensor for client application using MATLAB and C++.
- Work with other members of the tillage team to design software structure, communication protocol and hardware architecture of automated tillage implement.
- Build, visualize, and simulate algorithms to condense LiDAR data into a usable metric for feedback control.
- Create a graphical user interface on MATLAB and Python with a TCPIP and UDP listener thread using to conduct live analysis during field tests.
- Document, review and present results and commercial viability of research investigation to project sponsors.
- Compile Simulink model into C code for use on embedded controllers.
- Utilize machine vision and machine learning estimate ground profile characteristics from sensors.
- Currently getting trained on usage of Labview

### ***Ag Leader Engineering Co-op***

May 2017 - Dec 2017

- Process and analyze CAN data of mass flow from John Deere combine and grain carts.
- Optimize existing MATLAB programs used for data processing resulting in a reduction of program run time by a factor of 270. Benchmark time was 9 hours, new program is 2 minutes.
- Create new MATLAB programs and GUI to speed up data processing and data analysis.
- Work in an agile environment for MATLAB software development.

### ***Iowa State University BSE department- Student Lab Technician***

October 2015-May 2017

- Program webapps in Javascript, HTML, PHP, and Python to help facilitate research & data collection for Agricultural research
- Solder circuit boards and wire electrical system.

## Relevant Skills:

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### ***Software & Programming:***

MATLAB, Simulink, Stateflow, C, C++, Linux (Ubuntu), OpenCV, SQL, Java, JavaScript, HTML, JMP, CANoe, PID control, Git, Microsoft Office, ROS, Kalman Filter, Machine Learning, Python

### ***Mechanical:***

Automation Studio, SOLIDWORKS, Modelica, Simscape, power tools, hydraulic assembly, abrasive water jet.

### ***Sensor & Electronics:***

LiDAR, IP camera, Arduino, Beaglebone, Raspberry Pi, M220, Data Loggers, Encoders, IMU, GPS, CAN Bus J1939, UDP, Serial, I2C, TCP/IP, DC & AC motors, stepper motors, Radar

### ***Language:***

English, Chinese, Malay

## Leadership & Activities:

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### ***ISU Robotics Club -Ion Autonomous Snowplow Competition*** Aug 2017 - Present

#### ***Mechanical Lead:***

- Design, source and manufacture drive train and inner structure for an autonomous snowplow.
- Assist with programming and testing LiDAR obstacle detection system in C++.

### ***First Robotics Competition Mentor - Controls***

Dec 2017 - Present

-Teach and advise high school students in:

- Mechanicals skills: Power tool usage, CAD, Pneumatics
- Programming skills: Java, Implementation of control concepts including PID, path planning, odometry, and sensor usage.
- Electrical skills: Soldering, Crimping, Wiring

### ***American Society of Agricultural and Biological Engineers (ASABE)***

#### ***ASABE Robotics Team Leader:***

May 2016-Aug 2017

- 4<sup>th</sup> place in ASABE Robotics competition 2016. Manage team members tasked with design and manufacturing.
- Design mechanical and electrical parts of the robot and program robots for a fully autonomous robot competition.
- Obtain funding for the team through sponsorship letters and contacting potential sponsors.

### ***Iowa State Entrepreneurship Club Treasurer***

#### ***Treasurer:***

August 2019- Present

- Manage club accounts; funding, sponsorships, and spending.
- Learn about the business aspect of product development, business models, customer sourcing, and value proposition.
- Improve public speaking skills with activities such as pitching competitions and regular idea presentations.

## Relevant Coursework:

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### ***ABE 510: Electronic Systems Integration***

Utilized MATLAB and Simulink to program embedded controllers to take in CAN joystick input for PID feedback control of linear actuators and motors.

### ***ABE 503: Modeling, Simulations, and Controls***

Utilize model-based programming (MATLAB Simulink/Modelica/Simscape) to model linear mechanical systems. Work with classical controls such as PID and state-space modeling.

### ***ABE 413: Fluid Power Engineering***

Hydraulic circuits and systems. Hydrostatic transmissions. Characteristics of control valves. Analysis and design of hydraulic systems for power and control functions. Utilize PID control for hydraulic system.