Khai Yi **Chin**

Austin, TX (Open to relocation)
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SUMMARY

Self-motivated mechanical engineer competent in high-level programming and experienced working in a fast-paced, interdisciplinary product development environment with significant knowledge in dynamical modeling, control theory and mechanical design. Critical thinker and practical with 3.5 years of R&D background.

HIGHLIGHTS

Experienced in:
- Mathematical modeling and control theory
- Test setup interface and automation
- Electromechanical devices and microcontrollers
- Mechanical design and manufacturing techniques
- Generating technical documentation and drawings

Proficient in:
- MATLAB (5 yrs), Simulink (2 yrs), Python (1 yr)
- English, Mandarin Chinese, Cantonese, Malay

Soft Skills:
- Analytically minded problem solver
- Excellent communication skills and team player

WORK EXPERIENCE

Mechanical Engineer (Monocular Vision Inertial Measurement Unit Development) 04/18 – 02/19
DunAn Precision, Inc. – R&D Division, Austin, TX
- Lead mechanical engineer in development of 1st generation monocular vision inertial measurement unit (VIMU).
- Analyzed performance characteristics between ToF-based and IR stereo vision based computer vision cameras.
- Studied and built sensor fusion algorithm using an extended Kalman filter (EKF) in MATLAB.
- Researched parameter estimation methods that included ARX, transfer functions and state augmented SDRE.
- Compared noise characteristics of gyroscopes and accelerometers of various IMUs using the Allan Variance plot.
- Operated ground robotic vehicle and robotic arm for magnetic field and SLAM experiments.
- Investigated MEMS gyroscope and accelerometer designs using dynamical modeling in Simulink.
- Achieved in-house product assembly by designing, implementing robotic and pneumatic systems.
- Facilitated product testing by formulation of test procedures based on MIL and ASTM standards.
- Created high precision VIMU and test fixture drawings using GD&T (ASME Y14.5-2009) in Solidworks.
- Developed critical product documentation: BOMs, flow processes, assembly manuals, risk analyses, tech reports.

Graduate Research Assistant 05/17 – 04/18
The University of Texas at Austin, TX
- Investigated properties of doped carbon nanotubes for development of cabling via computational modeling.
- Interpreted scientific literature for past research efforts and state-of-the-art carbon based materials/devices.
- Explored the cause effect-physics of data via band structure analyses and transmission functions.

Undergraduate Research Assistant 11/14 – 06/16
Robotics and Motion Laboratory, Ann Arbor, MI
- Won the 2015 Prize for Contributions in Soft Robotics Research competition for development of robotic sensor.
- Facilitated experimentation of robotic actuator using LabVIEW, a data acquisition device and a NI I2C bus.
- Designed and built testbed using pressure sensors, solenoid valves and electrical circuitry for sensor testing.

EDUCATION

The University of Texas at Austin **2018**
M.S. in Mech. Engineering (Dynamic Sys. & Controls)
CGPA: 3.90/4.00

University of Michigan, Ann Arbor **2016**
B.S. in Engineering (Mechanical Engineering)
CGPA: 3.52/4.00

AFFILIATIONS

Member, American Society of Mechanical Engineers (ASME)

SKILLS

Languages/Software: MATLAB, Solidworks, Simulink, Python, Git, LabVIEW, Microsoft Office Suite, C/C++.
Operating Systems: Windows, Ubuntu.

LEADERSHIP

Logistics Director; Check-in Co-director for Midwest Games '15 10/14 – 07/15
University of Michigan Malaysian Students' Association

- Led a team of students for the largest crowd volume sporting event for Malaysians in the US and Canada.
- Streamlined the check-in process of 1000 participants by systemizing participant information, spreading crowd volume across different stations.
- Planned large scale venue reservations for event via coordination and allocation of duties to team members.

PROJECTS

Modeling and Control of Torque Driven Robot – Introduction to Modern Control 01/17 – 05/17

- Designed a finite horizon linear quadratic tracker for a UGV model for trajectory tracking in MATLAB.
- Achieved 90% accuracy by designing reduced order observer for the tracker in MATLAB.
- Investigated and analyzed performance of a finite horizon vs. infinite horizon LQR on UGV model.

Emergence in Machine Learning Algorithms – Self Initiated Project Course 01/17 – 05/17

- Achieved optimal path planning by building the Ant Colony Optimization (ACO) algorithm in Python.
- Researched deterministic properties of machine learning algorithms by implementing the ACO algorithm.

Design of Radiation Sensor Linkage on UGV – Robot Mechanism Design 09/16 – 12/16

- Improved linkage sweeping range by 50% through kinematic analyses on MATLAB.
- Designed 3D CAD model in Solidworks, integrated with parts and components from McMaster-Carr.
- Created engineering drawings for in-house machining and assembly of prototype.

Design of Fuel Cell Controller for Test Protocol – Design and Manufacturing 09/15 – 12/15

- Automated process in LabVIEW interfacing a data acquisition device (DAQ) for fuel cell controller.
- Enhanced product usability through preparation of technical documentation and schematic drawings.
- Worked in a team of diverse abilities to build the fuel cell controller prototype.

Parking Brake & Mount Design – University of Michigan Solar Car Team 01/14 – 10/14

- Won the 2014 American Solar Challenge by designing parking brake, brake mount for solar car Quantum.
- Achieved brake design requirement of withstanding 10% of vehicle weight with Solidworks and Hypermesh.
- Collaborated with fellow engineers during design process for optimizing dimensions and structural fitting.

PUBLICATIONS

- Felt, W., **Chin, K. Y.** and Remy, C. D., 2017. "Smart Braid Feedback for the Closed-Loop Control of Soft Robotic Systems," *Soft Robotics*, **4** (3), pp. 261-273.
- Felt, W., **Chin, K. Y.** and Remy, C. D., 2016. "Contraction Sensing with Smart Braid McKibben Artificial Muscles," *IEEE/ASME Transactions on Mechatronics*, **21** (3), pp. 1201-1209.
- Felt, W., **Chin, K. Y.** and Remy, C. D., 2016. "Self-Sensing Pneumatic Artificial Muscles for Feedback Control using the Inductance of "Smart Braids"," *Dynamic Walking 2016*, University of Michigan, Ann Arbor, MI.
- Felt, W., **Chin, K. Y.** and Remy, C. D., 2015. "Dynamic Tracking of Joint Motion with Antagonized Smart Braids," *Fluid Power Innovation & Research Conference 2015 (FPIRC15)*, Chicago, IL.

AWARDS

Recipient, Research Merit Fellowship 2018
Recipient, Soft Robotics Toolkit 2015 Prize for Contributions in Soft Robotics Research 2015