SACHIN KUKKE

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EDUCATION

University of Illinois at Urbana-Champaign, Urbana-Champaign, IL — Jan 2020 - Present
Master of Science, Aerospace Engineering — GPA - 3.72/4

- Space systems track (systems engineering,machine-learning/ deep RL,control systems)

BMS College of Engineering - VTU, Bangalore, India — Sep 2011 - Jun 2015
Bachelor of Engineering, Mechanical Engineering — GPA - 8.86/10

ACADEMIC RESEARCH EXPERIENCE

Graduate Research Assistant (UIUC, Urbana-Champaign, IL) — Jan 2021 – Present

- Application of model-free and model-based Meta Reinforcement learning methods (machine-learning based algorithms primarily developed for robotics) to Mars powered spacecraft descent Guidance & Control problem which enables autonomous online adaptive planning & control in uncertain and dynamic environments.

PROFESSIONAL EXPERIENCE

Mechanical Engineering consultant, Zettaone Technologies (Bangalore, India) — Apr - Nov 2018

- Onsite Mechanical Engineering consultant for Seagate Technology

Mechanical Design Engineer, Seagate Technology (Bangalore, India) — Jul 2015 – Feb 2018

- Worked on mechanical design, Thermal solution development for several high-capacity, high-performance R&D Flash storage drives (SSD, PCIe, M.2).
- Handled Mechanical & Thermal testing and qualification of several Flash storage drives throughout the entire product development lifecycle.

PROJECTS

Robust servo LQR control for Linear Aircraft model (Coursework Project) — Aug 2021 - Nov 2021

- Implemented Robust servo LQR control for a linear aircraft model in Matlab to assess system response and stability margins.

Inverted Reaction wheel pendulum control (Coursework Project) — Feb 2020 - May 2020

- Implemented system identification and Simulink based PD feedback control for a laboratory Reaction wheel pendulum.

Design & Development of 50,000 Ns Total impulse class Hybrid Rocket Propulsion System
(Pursued part-time during weekends) — Sep 2015 - Jan 2018
(Propel lab, BMSCE: Senior Design Project) — Sep 2014 - Jul 2015

- Team lead responsible for detailed design, budget management, procurement and establishing design & test safety procedures for N20-paraffin wax based hybrid rocket motor.
- Involved in detail design and structural analysis of combustion chamber, high pressure oxidizer tank, oxidizer feed system and horizontal engine test stand.
- Drove development of LabView based instrumentation for sensor data acquisition, signal conditioning and valve control.

Design and Development of Micro Air Vehicle for SAE Aero-Design West Competition
Aero-club, BMS College of Engineering (Bangalore, India) — Sep 2012 - Mars 2014

- Drove overall design, aerodynamics and manufacturing of a MAV achieving 1.28 lbs payload capacity with 0.48 payload fraction.

SKILLS

Software Skills: Python (tensorflow, pytorch, object-oriented programming, multi-processing, multi-threading), MATLAB, Simulink, C, git
Mechanical CAD & CAE Skills: Solidworks, ProE Creo Parametric, DFM, DFA, ANSYS
Project management: Agile JIRA, ability to lead small cross-functional teams, systems approach