Chethan Ramakrishna Reddy

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♂ Pronoun - He, ☆ Date of birth - 14 Dec 1989, † Citizenship - India, → US VISA CLASS - F1, Availability - 20st Dec 2021

EDUCATION

MICHIGAN TECHNOLOGICAL UNIVERSITY
PhD in Mechanical Engineering
Co-advised by Dr Mahdi Shahbakhti and Dr Rush D. Robinett III
Research focus - Model-based Predictive Control of Co-generation Energy Systems
Expected Aug 2021 | Houghton, MI
CGPA (so far): 3.77/4.00

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA
MTech (MS equivalent) in Mechatronics Engineering
May 2013 | Surathkal, India
CGPA: 8.37 / 10, US equivalent CGPA: 4.00 / 4.00

EXPERIENCE

RESEARCH ASSISTANT | Michigan Technological University
May 2017 – Present | Houghton, MI
- Research on Model Predictive Control of (i) Building HVAC System with Solar Energy Integration, and (ii) Internal Combustion Engine with Waste Heat Recovery at the Energy Mechatronics Laboratory.

INTERN | Halla Mechatronics
Jan 2019 – May 2019 | Bay City, MI
- Closed-Loop (Plant and Control) Model Development, Validation and Simulation of Electronic Controllers in Motor Controls Group.

SENIOR ENGINEER | Robert Bosch India
Sep 2015 – Aug 2016 | Bangalore, India
- Simulation Expert in the System Engineering Group (Responsible for Hybrid Systems and E-Mobility).

ENGINEER | Robert Bosch India
Aug 2013 – Sep 2015 | Bangalore, India
- Plant model development, control model development, integration of models, and system simulation in modeling and simulation group.

INTERN | Robert Bosch India
Jun 2012 – Mar 2013 | Bangalore, India
- Plant Modeling Support and Simulation Based Research on Automotive Waste Heat Recovery using Thermo-Electric Generators (My Masters Thesis).

SELECTED PUBLICATIONS

- M. Toub, **C. R. Reddy** , R. D. Robinett III, M. Shahbakhti, **"Integration and Optimal Control of MicroCSP with Building HVAC Systems: Review & Future Directions"** , in Energies, Volume 14, Issue 3, pp.730, 2021.
- **C. R. Reddy** , M. Shahbakhti, R. D. Robinett, and M. Razmara, **"Exergy-wise predictive control framework for optimal performance of MicroCSP systems for HVAC applications in buildings"** , in Energy Conversion and Management, Volume 210, pp.112711, 2020.
- **C. R. Reddy** , M. Toub, M. Razmara, M. Shahbakhti, R. D. Robinett, G. Aniba, **"Modeling and Optimal Control of Micro-CSP and a Building HVAC System to Minimize Electricity Cost"** , in ASME 2018 Dynamic Systems and Control Conference.

SKILLS

- Modeling, Simulation, Data Analysis, and Code Generation in Matlab/Simulink.
- Automotive System Simulation in GT-Suite, AVL, AMESim, CarSim. And Co-Simulation with Matlab/Simulink.
- Model Predictive Control. Optimal Controller Design. Optimization Techniques. Linear and Non-Linear Control Theory.
- Model, Software, and Hardware in Loop (MiL, SiL and HiL) Model Development and Testing. Tool chains - ETAS, DSPACE, and MotoHawk.
- Mechanical CAD. Tools - Solidedge, Solidworks.

PROJECTS

ACADEMIC

PhD Course Projects

- Fuel Consumption Reduction Technologies and Hybrid Design
- Control System Development for a Hybrid Automotive ECU (MotoHawk)
- Effect of External Supercharging in a CI Diesel Engine with Swirl Combustion Chamber (Simulation study)
- Efficacy of PV Solar Energy in Houghton, MI
- Decentralized Model Predictive Control for Thermal Control of buildings
- Optimal Control of Wave Energy Converters

Masters Thesis

- Development of Automotive Thermo-Electric Generator (ATEG)

Bachelors Thesis

- Design and Fabrication of Boundary Layer Turbine as a Potential Automotive Engine (Compressed Air as Fuel)

INDUSTRIAL

- Model-based Design, Testing, and Calibration
- Electrically Assisted Power Steering System Simulation
- Mechanical Design, Fabrication, and Controller Prototyping of Automotive Exhaust Active Noise Cancellation and Enhancement System
- Bosch Boost Recuperation System Simulation
- Proof of Concept and Vehicle Demonstrator of Automobile Waste Heat Recovery System (using Thermo-Electric Generator)