

Chethan R. Reddy

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♂ Pronoun - He, ☆ Date of birth - 14 Dec 1989, † Citizenship - India, → US VISA CLASS - F1, Available - 17 Aug 2020

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 2020 | Houghton, MI

CGPA (so far): 3.79/4.00

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

INTERN | HALLA MECHATRONICS

Jan 2019 – Present | Bay City, MI

- Closed-loop (plant and control) model development & simulation of electronic controllers in motor controls group.

TEACHING ASSISTANT | MICHIGAN TECHNOLOGICAL UNIVERSITY

Aug 2017 – Dec 2018 | Houghton, MI

- Lab instructor for about 45 students in fall '17, spring '18, and fall '18 terms. The course focuses on dynamics and control of mechanical systems, and consists mostly of senior undergraduate students in Mechanical engineering.

RESEARCH ASSISTANT | MICHIGAN TECHNOLOGICAL UNIVERSITY

May 2017 – Present | Houghton, MI

- Research on model-based 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.

SENIOR ENGINEER | ROBERT BOSCH INDIA

Oct 2015 – Aug 2016 | Bangalore, India

- Simulation expert in the system engineering group (responsible for hybrid systems & 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).

TEACHING ASSISTANT | NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

Jan 2012 – May 2012 | Surathkal, India

- Lab instructor for about 60 students in spring '12. The course focuses on computer aided engineering drawing of mechanical systems, and consists mostly of junior undergraduate students in Mechanical engineering.

PUBLICATIONS

- 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, American Society of Mechanical Engineers, 2018, pp. V002T28A004-V002T28A004.
- M. Toub, C. R. Reddy, M. Razmara, M. Shahbakhti, R. D. Robinett, G. Aniba, "Model Predictive Control for MicroCSP Integration into a Building HVAC System", in 2018 14th IEEE International Conference on Control and Automation (ICCA), IEEE, 2018, pp. 890-895.
- C. R. Reddy, S. S. Rao, V. Desai, K. Ramachandran, "Modeling of an Automotive Thermo-Electric Generator (ATEG)", International Journal of Science and Research (IJSR), India Online ISSN, pp.2319-7064, 2013.

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)

SKILLS

- Modeling, simulation, data analysis, code generation in Matlab/Simulink.
- Automotive system simulation in GT-Suite, AVL, AMESim, CarSim. And Co-simulation with Matlab/Simulink.
- Model-based predictive control.
- Linear and non-linear control theory.
- Model-based embedded software development tool chains of ETAS, DSPACE, MotoHawk.
- Model in loop (MiL), software in loop (SiL), and hardware in loop (HiL) model development and testing.