# LIKHITH MANJUNATHA

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## RESEARCH INTERESTS

Hydrogen energy systems, polymer electrolyte fuel cells

## EDUCATION

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| Kyushu University, Japan | **Ph.D** | **Hydrogen Energy Systems** | | *Expected:* Fall 2023 |
| Kyushu University, Japan | **M.E** | **Mechanical Engineering** | GPA: 3.9 / 4.0 | Oct 2018 – Sept 2020 |
| Kyushu University, Japan | **B.E** | **Mechanical Engineering** | GPA: 3.3 / 4.0 | Oct 2014 – Sept 2018 |

## RESEARCH EXPERIENCE

Advanced Hydrogen Energy System Lab, Kyushu University
**Graduate Researcher** Oct 2020 – Present
*Supervisor: Prof. Akari Hayashi*
- Investigating cell reversal and degradation mechanisms in polymer electrolyte fuel cells

Energy Transport Research, University of Illinois at Urbana-Champaign
**Research Scholar** Aug 2019 – Nov 2019
*Supervisor: Prof. Nenad Miljkovic, Dr. Soumyadip Sett*
- Investigated defrosting mechanisms on lubricant infused surfaces
- Developed image analysis method for easy and accurate frost thickness measurement
- Automated chiller and camera operation using serial communication
- Fabricated superhydrophobic CuO and lubricant infused surfaces

Heat and Mass Transfer, Kyushu University
**Undergraduate / Graduate Researcher** Apr 2017 – Nov 2019
*Supervisor: Prof. James J. Cannon*
- Developed a molecular-scale technique to gain an enhanced understanding of atomic interaction mechanisms that contribute to thermal conductivity and viscosity of liquids
- Developed a method to prevent inconsistent readings commonly encountered in equilibrium molecular dynamics calculations of transport properties
- Implemented a software stack to automate post-processing and analysis of data

## INTERNSHIP EXPERIENCE

Q&A Works Fukuoka, Japan
**Data Science Intern** Feb 2019 – May 2019
- Designed and implemented novel image-processing method to detect molten nickel level in a container using computer vision and regression techniques
- Implemented machine learning based Random Forest method to identify important performance indicators affecting component lifetime of a phys. vapor deposition plant
- Prepared complete learning material for a 3-day paid intensive training course to learn data analysis using Python; and training material for basic machine learning workflow

Takaishi Foods, Kitakyushu, Japan
**Data Science Intern** Feb 2019 – Apr 2019
- Performed data analysis to help identify factors that contribute to increased sales of mochi rice cakes, including season, weather, impact of televised/newspaper advertisement and pension pay-days from inferred results
- Built inventory demand and sales forecast model using SARIMAX time series analysis

Airtec Inc. Fukuoka, Japan
**Engineering Intern** Nov 2016 – Dec 2016
- Explored different business models to sell drain-timer valves in steel plants
- Initiated and established potential business connection with valve makers in India
- Explore markets for drain timer valves in Taiwan; visited steel plants, air compressor manufacturers, a calcium carbonate factory and attended various business proceedings

Toyota Kirloskar Motor — **Engineering Intern** — Feb 2016 - Mar 2016
Bangalore, India
Performed analysis on cycle-time and accuracy, of newly installed welding equipment during installation and process change in a manufacturing line

## TEACHING EXPERIENCE

1) *TA* for **Python Programing for Analysis** course for 2nd year undergrad students — Oct 2020 – Feb 2021
2) *TA* for **Complex Function Theory** course for 3rd year undergrad students — Apr 2019 – Aug 2019
3) *Student mentor* for **Linear Algebra II** for 2nd year undergrad students — Oct 2017 – Feb 2018
4) *Student mentor* for **Linear Algebra I** for 1st year undergrad students — Apr 2017 – Aug 2017

## HONOURS AND AWARDS

1) **Kobayashi Scholarship,** 1 of 50 recipients from top 25 universities in Japan; Chosen and awarded by the President as a representative of the new scholars — Apr 2019 – Sep 2020
2) **HP Ideathon,** Best concept award by ***Hewlett-Packard*** for business applications of Immersive technology, 2017
3) **International Business trip (Taiwan),** Explored markets for drain timer valves with CEO of ***Airtec Inc.***, 2017
4) **JASSO Scholarship,** Awarded on recommendation based on academic performance — Apr 2016 – Mar 2019
5) **Ranked top** 2% (145000+ students statewide) in Common Entrance Exam, India — May 2013

## TECHNICAL SKILLS

**Languages:** Python, Java, Scilab
**Libraries:** numpy, pandas, seaborn, scikit-learn, OpenCV, tensorflow
**Software:** LAMMPS, Linux, TeX, Git
**Experimental:** Condensation heat transfer, frosting/defrosting, fabrication of superhydrophobic surfaces and LIS
**Others:** Statistical Mechanics, ML techniques (Bayesian, Time series, Decision Tree, Random Forest, Neural networks), web scraping, data analysis

## CONFERENCE / PRESENTATIONS

**L. Manjunatha**, H. Takamatsu, J. J. Cannon, "*An investigation into the role of hydroxyl groups on the thermal conductivity of small alcohols using molecular simulation with atomic-level Green-Kubo analysis,*" 31st International Symposium on Transport Phenomena (13-16 October 2020, Honolulu, Hawaii)

**L. Manjunatha**, H. Takamatsu, J. J. Cannon, "*Ethylene glycol and Propanol: Understanding the influence of an extra hydroxyl group on the mechanisms of thermal conductivity,"* UK Heat Transfer Conference (8-10 September 2019, Nottingham, UK)

**L. Manjunatha**, H. Takamatsu, J. J. Cannon, "*An investigation into application of the Green-Kubo method in molecular simulation to help understand the mechanisms of thermal conductivity of alcohols,"* JSME Thermal Engineering conference (20-21 October 2018, Toyama, Japan)

**L. Manjunatha**, H. Takamatsu, J. J. Cannon, "*Investigation into influence of hydroxyl group placement on the thermal conductivity of propane-base alcohols using molecular dynamics simulation,"* The 8th Symposium on Micro-Nano Science and Technology (31 Oct- 2 Nov 2017, Hiroshima, Japan) (**Poster**)

1. Falling Walls, *Breaking the wall of experimental search time*, (13 June 2019, Tokyo, Japan)
2. Kyushu University Future Creators in Science Project (December 2018, Fukuoka, Japan) **(Invited talk)**
3. International Conference for Undergraduate Research (25 September 2018, Fukuoka, Japan)

## MEMBERSHIP

The Japan Society of Mechanical Engineers (JSME)