

JOHN SEBASTIAN

2johnsebastian@gmail.com \diamond john-seb.github.io

Research Interests

Applied Mathematics; Fluid Mechanics; Experimental Development; Engineering for Biology

Education

College of Engineering, Trivandrum

University of Kerala

Bachelor of Technology (Mechanical Engineering)

Overall GPA: 8.48/10

First Class with Distinction

July 2013 - May 2017

Professional Research Experience

Research & Development, MRF Tyres

Research Engineer

July 2017 - September 2020

Chennai, India

- Designed novel experiments to derive the dynamic characteristic curves of motorcycle tyres by constraining relative slip
- Implemented a statistical tyre performance prediction method to reduce the number of track tests
- Developed image analysis methods to estimate complex deformations at the tyre contact patch and established its effect on higher harmonic vibrations
- Devised a numerical method for optimising the geometry of cross ply motorcycle tyres using Class Shape Transformation (CST) parameterisation translated from airfoil theory

STAD TechnoInnovations

Mechanical Design Intern

October 2015 - April 2016

Ernakulam, India

- Reverse engineered the complex shape and material characteristics of the tibial bone implant
- Designed a fully enclosed knee retraction mechanism for patients with ACL damage

Academic Research Projects

Design and Optimization of Short Span Hydrofoils

Supervisor: Dr Ranjith S Kumar

Bachelor's Thesis

- Developed a general inverse design method for foil sections with improved prescription of structural properties
- Proposed a simple method to integrate the effect of the free surface on hydrofoil lift

Rapid and Low- Cost Fabrication of Microfluidic Chips

Supervisor: Dr Ranjith S Kumar

Micro/nanofluidics Research Laboratory

- Developed a rapid prototyping method to make simple, expendable microfluidic lab-on-a-chip panels on plastic (sandwiched and layered), with fluid channels as small as 150 microns

Leadership and Mentorship Roles

Member, Emergency Design Collective (EDC)

2020

- Part of a global team of problem solvers working together to mitigate new challenges in the wake of the COVID-19 pandemic.
- Nominated to top three projects under "Educational Challenges during a Pandemic"

Student Coordinator, Innovation Center CET

2016 - 17

- Coordinated weekly meetings, brainstorming sessions and training programs in the state run facility
- Organised the first undergraduate thesis project expo, Innov-EXPO in May 2017

Bosch Student Ambassador

2016 - 17

- Coordinated research collaboration, projects and student placements

Project Coordinator, Society of Automotive Engineers (SAE)

2015 - 16

- Launched and mentored eight projects and maximized student participation in national design competitions

Selected Achievements

- Institute Topper - IET PATW 2016 Presentation Competition “*Microfluidics for the Future*”
Institution of Engineering and Technology (IET)- Present Around The World (PATW)
- Founded CETALKS, an in- campus talk show in 2015
- Attended Indian Science Congress 2010 as Student Delegate

Additional Courses (Relevant)

- BIOE 271 Frugal Science: Project- Detecting Microplastics using Impedance Spectroscopy *Stanford*
- Advanced MATLAB for Scientific Computing *Stanford Lagunita*
- Statistical Learning *Stanford, Lagunita*
- Computer Science 101 *Stanford, Lagunita*
- Data Science Math Skills *Duke, Coursera*
- Basics of Transport Phenomena *TU Delft, Edx*
- Mechanics Review (8.MReVx) *MIT, Edx*

Extra Curricular Engagement

- Selected as travel photographer for a Swiss documentary project, “Yuujou” into the final team of five, out of 30,000 global applicants in 2019
- Toy making, DIY Microscopy, Origami
- Blogging (www.storygrapher.org)

References

Ranjith S. Kumar, PhD

Assistant Professor
Micro/nanofluidics Research Laboratory
Department of Mechanical Engineering
College of Engineering, Trivandrum
Kerala, India - 695 016
Email: ranjith@cet.ac.in

Abhilash Suryan, PhD

LM AIAA, LM AeSI, LM ISTE
Assistant Professor
Department of Mechanical Engineering
College of Engineering, Trivandrum
Kerala, India - 695 016
Email: suryan@cet.ac.in

Sagar Vasant Telrandhe, PhD

Assistant Manager
MRF Research Center, MRF Ltd
Chennai, India - 600 019
Email: sagar.telrandhe@mrfmail.com

A. Sreekumaran Nair, PhD

Senior Manager
MRF Research Center, MRF Ltd
Chennai, India - 600 019
Email: sreekumaran.nair@mrfmail.com