

# FRANCIS JAMES

## Robotist

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http://fjam100.github.io/

✉ Graf 200, Robotics and Human Control Systems Lab, OSU  
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📍 Corvallis, OR

## EXPERIENCE

Junior Research Fellow

International Institute of Information Technology

📅 June 2014 – June 2015

📍 Hyderabad, India

## PUBLICATIONS

### 📄 Journals

- James, Francis, Suril V Shah, et al. (2016). "Reactionless Maneuvering of a Space Robot in Precapture Phase". In: *Journal of Guidance, Control, and Dynamics*, pp. 2419–2425.

### 👥 Conference Proceedings

- Pareekutty, Nahas et al. (2016). "RRT-HX: RRT With Heuristic Extend Operations for Motion Planning in Robotic Systems". In: *ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. American Society of Mechanical Engineers, V05AT07A052–V05AT07A052.
- James, Francis, Shubham Vyas, et al. (2015). "Design and development of an earth based experimental setup for testing algorithms on space robots". In: *Proceedings of the 2015 Conference on Advances In Robotics*. ACM, p. 38.
- Teja, K Hari, Francis James, and Suril V Shah (2015). "Optimal whole body motion planning of humanoid with articulated spine for object manipulation in double support phase". In: *Proceedings of the 2015 Conference on Advances In Robotics*. ACM, p. 30.

### 👥 Under Preparation

- James, Francis, Burak Sencer, and Ravi Balasubramanian (2017). "Hybrid Force-Position Control with Dynamic Stiffness Tuning for Robotic Deburring".

## SELECTED PROJECTS

- Robotic Deburring:** Applying nonlinear control theory to perform hybrid force position control with tunable stiffness
- Control of a Stewart Platform:** Using linear controllers and an Extended Kalman Filter to compensate for external forces while maintaining position
- Reactionless Maneuvering of a Space Robot:** Path planning for a highly constrained nonholonomic system while avoiding algorithmic singularities. Uses basis vectors, optimization, sampling based planning and nonlinear time scaling.
- Robot to Play Let's go Fishing (family game):** Course project for Applied Robotics. Won 3rd place in final robot face off.
- Gesture Controlled Articulated Arm:** Using a Kinect to recognize kinematic angles of a human arm and replicating the pose on an articulated arm

## EDUCATION

M.S., Robotics

Oregon State University

📅 Sept 2015 – Present 📍 Corvallis, OR

B.E.(Hons), Mechanical Engineering

BITS Pilani

📅 2010 – 2014

📍 Goa, India

## RELEVANT COURSEWORK

- Robotics and Human Control Systems
- Sequential Decision Making
- Linear Multivariate Control Systems
- Intelligent Agents and Decision Making
- Nonlinear Dynamic Analysis
- Applied Robotics
- Actuator Dynamics
- Geometric Mechanics
- And more ...

## INTERESTS

Dynamics and Controls

Motion Planning

Learning

Vision

State and Parameter Estimation

Grasping and Manipulation

Robotic Prostheses

## SKILLS

MATLAB, Mathematica, Python, C++,  
OpenCV, ROS

## REFEREES

**Prof. Ravi Balasubramanian**

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Corvallis, OR

**Prof. Suril V Shah**

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✉ Dept of Mechanical Engineering, Indian  
Institute of Technology, Jodhpur, India