FRANCIS JAMES

Roboticist

@ jamesf@oregonstate.edu | Graf 200, Robotics and Human Control Systems Lab, Oregon State University | Corvallis, OR
http://fjam100.github.io/ | www.linkedin.com/in/francisJames | http://github.com/fjam100 | +1 541 829 2099

EXPERIENCE

Junior Research Fellow, Robotics Research Center
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 nonholonmic system while avoiding algorithmic singularities
- **Robot to Play Let's go Fishing:** Course project for Applied Robotics, Won 3rd place in final robot face off
- **Learning to Play Snake:** Using feature based Reinforcement Learning to play Snake
- **Controlling a Flexible Drive with Uncertain Parameters:** Using an Adaptive Controller to Identify System Parameters while Tracking a Trajectory
- **Gesture Controlled Robotic Arm:** Using a Kinect to Track Human Arm Pose and Replicating it on an Articulated Robotic Arm

EDUCATION

M.S., Robotics
Oregon State University
Sept 2015 – Present Corvallis, OR
GPA: 3.96/4

B.E.(Hons), Mechanical Engineering
BITS Pilani
2010 – 2014 Goa, India

RELEVANT COURSEWORK

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

INTERESTS

Dynamics and Controls | Motion Planning | Learning | Vision | State and Parameter Estimation | Grasping and Manipulation | Robotic Prostheses

SKILLS

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

OTHER PROJECTS

- **Mirogravity Simulator for Space Robot:** Building a microgravity simulator using air bearings and Dynamixel Mx64 servos controlled by a Cubieboard
- **Capturing Human Force and Motion Data:** Using an ATI Mini45 Force Sensor, OptiTrack Motion Cameras and an APDM IMU to record and recreate human motion during a machining process