

# Feroz Hussain Shaik

---

CONTACT INFORMATION      Center for Scientific Computing and Visualization Research, TXT 105      *E-mail:* [fshaik@umassd.edu](mailto:fshaik@umassd.edu)  
University of Massachusetts Dartmouth      *Website:* [feroz6.gitlab.io](http://feroz6.gitlab.io)  
North Dartmouth, MA 02747 USA

EDUCATION      **University of Massachusetts Dartmouth**, North Dartmouth, Massachusetts, USA

PhD, Engineering and Applied Science (EAS), current

- Computational Science and Engineering (CSE) option
- Advisor: Scott E. Field

MS, Physics, 2020

- Thesis Topic: “Effects of Higher Harmonic Modes on Gravitational Wave Parameter Estimation of Aligned-Spin Binary Black Hole Systems”
- Advisor: Scott E. Field

**Manipal Institute of Technology**, Manipal, Karnataka, India

B.Tech, Electronics and Communication Engineering, 2016

RESEARCH EXPERIENCE      **University of Massachusetts Dartmouth**, North Dartmouth, Massachusetts, USA

*Graduate Research Assistant*      January, 2018 - present  
Research project on *Effects of Higher Harmonic Modes on Gravitational Wave Parameter Estimation* under Prof. Scott Field.

- Project involves use of numerical relativity surrogate waveform models and parallelized computation codes.
- Learned and applied techniques in statistics, gravitational wave data analysis, and high performance scientific computing.
- Led development of automation and data analysis codes for the project.
- Applying statistical techniques to better understand errors due to neglecting higher harmonic modes.

**Manipal Institute of Technology**, Manipal, Karnataka, India

*Undergraduate Research*      January - August, 2016  
*Segmentation of Lung Vessels Using Radon Transform* under Prof. K. T. Navya.

- Image processing project on the application of Radon Transform to highlight and extract blood vessels in lung CT scan images in order to assist the early detection of lung cancer.
- Learned and applied advanced image processing techniques using MATLAB.
- Conference Proceedings publication by the Institute of Electrical and Electronics Engineers (IEEE) under the 2nd International Conference on Circuits, Controls, and Communications, CCUBE 2017 - Proceedings

*Projects and Presentations*

- *Applications of Independent Component Analysis in Astrophysical Image Processing* - Seminar presentation explaining the use of a signal separation algorithm on CMBR signal mixtures.
- *Contactless Digital Tachometer Using 8051 Microcontroller* - Hardware project with the microcontroller code written in Assembly Language during the course *Embedded System Design*.
- *Simplified Data Encryption Standard Algorithm using VHDL: A Case Study* - Software project to implement encryption algorithm studied during the program elective *Cipher Systems*. Written in VHDL language during the VLSI laboratory course.
- *Noise Canceling and Channel Equalization* and *Self-organizing neural networks based on spatial isomorphism for active contour modeling* - Paper reviews and presentations during the program

electives *Advanced Digital Signal Processing* and *Digital Image Processing*.

PUBLICATIONS

Shaik, Feroz H.; Lange, Jacob; Field, Scott E.; O'Shaughnessy, Richard; Varma, Vijay; Kidder, Lawrence E.; Pfeiffer, Harald P.; Wysocki, Daniel. *Impact of subdominant modes on the interpretation of gravitational-wave signals from heavy binary black hole systems* [arXiv:1911.02693](https://arxiv.org/abs/1911.02693), DOI: 10.1103/PhysRevD.101.124054

Varma, Vijay; Biscoveanu, Sylvia; Islam, Tousif; Shaik, Feroz H.; Haster, Carl-Johan; Isi, Maximiliano; Farr, Will M.; Field, Scott E.; Vitale, Salvatore. *"Evidence of Large Recoil Velocity from a Black Hole Merger Signal"* [arXiv:2201.01302](https://arxiv.org/abs/2201.01302), DOI: 10.1103/PhysRevLett.128.191102

CONFERENCE PRESENTATIONS

- *Error estimation and bounds for gravitational-wave surrogate models*, presented at the [APS April Meeting 2022](#)
- *Error estimation and bounds for gravitational-wave surrogate models*, presented at the [APS April Meeting 2021](#)
- *Impact of subdominant modes on the interpretation of gravitational-wave signals from heavy binary black hole systems*, presented at the [APS April Meeting 2020](#).
- *Impact of subdominant modes on the measurability of binary black hole spin parameters*, presented at the [22<sup>nd</sup> Eastern Gravity Meeting 2019](#) and the [APS April Meeting 2019](#).
- *Parameter estimation of binary black hole systems using numerical relativity surrogates and a rapid inference framework*, Contributed talk under the Gravity session at the [APS New England Fall 2018 Meeting](#).

TEACHING EXPERIENCE

**University of Massachusetts Dartmouth**, North Dartmouth, Massachusetts, USA

*Teaching Assistant* September, 2021 - December, 2021  
Teaching assistant for the introductory Engineering labs.

*Head Teaching Assistant* September, 2018 - May, 2019  
Head TA under faculty instructor Prof. David Kagan for the following courses -

- Physics for Science and Engineering II (PHY 112)
- Classical Physics II (PHY 114)

*Teaching Assistant* September, 2017 - May, 2018  
Teaching assistant for the introductory Electricity and Magnetism labs.

PROFESSIONAL EXPERIENCE

**HCL Technologies**, Hyderabad, Andhra Pradesh, India

*Project Intern* June, 2015 - July, 2015  
*Sensors Data Logger Using GPRS and TCP/IP Protocols*

- Built a Data Logging System using sensors and GPRS module that will transmit data over the internet using open-source ThingSpeak API.
- Studied applications of Embedded Systems in industries, along with future prospects of Internet of Things (IoT).

OTHER CONFERENCES AND EVENTS ATTENDED

- *Recent Trends in Astrophysics and Cosmology (RTAC) 2014* organized by Inter University Center for Astronomy and Astrophysics (IUCAA) and Manipal Center for Natural Sciences (MCNS).
- *Anshu - A Ray of Light* seminar organized by SPIE Manipal University Chapter, Department of Atomic and Molecular Physics, Manipal.
- *Adobe Flash Workshop* as part of PIXEL Adobe Week conducted by Institution of Engineers Computer Science & Engineering.
- *Analog Maker Competition 2014* conducted by Texas Instruments India University Program.

OUTREACH            Conducted astronomy workshops, talks, outreach events and stargazing sessions as the Vice-President and Technical Head of *The Astronomy Club, Manipal*.

COMPUTER SKILLS    • Languages: Python, C, Julia, MATLAB, Unix shell scripts  
                          • Applications: L<sup>A</sup>T<sub>E</sub>X, Git, Beamer  
                          • Operating Systems: Unix/Linux, Windows.