

Aamir Faisal Ansari (Applying to Chemical Engineering Department at Stanford)

Research Assistant at Indian Institute of Science, Bangalore, India. (Mob. +917020694980, Email. ansarifaisal@iisc.ac.in; aamirafa@gmail.com)

EDUCATION

- 2017-2019 Indian Institute of Science, Bangalore.
M.Tech. in Chemical Engineering with the first rank in the class (CGPA of 9.80/10)
Dissertation: 'Towards a better understanding of diversity and stability of microbial communities'
- 2013-2017 National Institute of Technology, Nagpur.
B.Tech. in Chemical Engineering with the first rank in the class (CGPA of 9.52/10)

RESEARCH EXPERIENCE

- October 2019- Current Research Assistant at Therapeutic Engineering Lab led by Prof. Narendra Dixit, Department of Chemical Engineering, IISc Bangalore (In collaboration with Unilever Research Centre, Bangalore).
- I aim to find potential biochemical signatures of skin infections using computational modeling of skin microbiome.
- July 2018- October 2019 Therapeutic Engineering Lab led by Prof. Narendra Dixit, Department of chemical engineering, IISc Bangalore.
- Analyzed the data and developed a mathematical model to highlight the role of high-order interactions in shaping the structure of a synthetic microbial community
 - Developed a generic technique to map the effective interactions of species in a microbial community. Further, I showed that the technique has predictive power and could be used to engineer microbial communities.
 - Developed an algorithm to decouple positive and negative counterparts of a net microbial interaction using computational modeling. Further, I used the algorithm to posit a role for cooperation in stabilizing natural microbial communities.
 - Wrote a review of the mathematical and computational models used to describe microbial communities.

- | | |
|---------------------------|---|
| August 2016-
June 2017 | <p>Lab of Prof. Shailesh Agrawal, Department of Chemical Engineering, NIT Nagpur.</p> <ul style="list-style-type: none"> • Performed experiments and devised a mathematical model for convective drying of a food product that outperformed previous models. |
| May 2016-June
2017 | <p>Research intern at Complex Systems and Molecular Sensors Lab led by Prof. Manoj M. Verma, Centre for Nano Science and Engineering, IISc Bangalore.</p> <ul style="list-style-type: none"> • Devised and characterized a technique for prototyping of microfluidic devices |

PUBLICATIONS

- Ansari, A. F. et al. 110th Anniversary: High-order interactions can eclipse pairwise interactions in shaping the structure of microbial communities. *Ind. Eng. Chem. Res.* (2019). doi:10.1021/acs.iecr.9b03190.
- Ansari, A. F. et al. Effective pairwise interactions obtained from leave-one-out experiments map the structure of a microbial community. Manuscript prepared (2019).
- Ansari, A. F. and Dixit, M. N. Decoupling metabolic interactions into their cooperative and competitive counterparts. Manuscript in preparation (2019)
- Ansari, A. F. and Dixit, M. N. A review of mathematical and computational modeling of microbial communities. Manuscript in preparation (2019).

SKILLS & ABILITIES

Softwares	Monte Carlo Simulation, Flux balance analysis (COBRA Toolbox), Optimization methods, Finite element methods in COMSOL Multiphysics, Machine Learning, Excel, 2D and 3D modeling in AutoCAD, Image Analysis.
Programming Languages	C, JAVA, Python, Matlab, R, VBA.
Laboratories	Mass spectrophotometry, Profilometry.
Relevant Courses	Special topics in theoretical biology (A+); Theoretical and mathematical ecology (A+); Modeling in chemical engineering (A+).

CONFERENCES, SYMPOSIA AND WORKSHOPS

- Presented a winning poster titled ‘High-order interactions can eclipse pairwise interactions in shaping the structure of microbial communities’ at the in-house symposium 2019 organized in the department of Chemical Engineering, IISc Bangalore.
- Participated in Summer school on mathematical and computational biology, setup by Indo-French Centre for applied mathematics,
- Presented a poster in a conference on ‘Human Microbiome: Resistance and Disease’ organized by European Molecular Biology Organization.

HONORS AND ACHIEVEMENTS

- All India Rank 3 in Graduate Aptitude Test in Chemical Engineering (GATE 2015) out of around 15000 exam takers.
- Gold medal for securing the highest CGPA in M.Tech. Chemical Engineering 2019.
- Gold medal for securing the highest CGPA in B.Tech. Chemical Engineering 2017.
- Best Poster Presentation Award at the in-house symposium 2019, Chemical Engineering Department, IISc Bangalore.
- Academic Excellence Prize in 2015, 2016, and 2017 for the Best Performance in B. Tech. Chemical Engineering.
- Won Scholarship under Institute Academia Interface scheme of Oil and Natural Gas Corporation, India (ONGC) (worth around 1000 dollars) during my B.Tech. The scholarship is awarded to only one student each year.
- All India Rank 3 in Indian Engineering Olympiad (IEO) 2015-2016
- Summa Cum Laude in high school, many best student awards in high-school, also won a state-level essay competition.