

AnkitJain

Contact

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Skills

Microfluidics

Droplet microfluidics
Continuous-flow microfluidics
Quake-Valves
On-chip electrodes
Impedence-based detection

Devices

CAD Designs
Photolithography
Mask Alignment
Soft Lithography
3D Printing

Optics

Fluorescence detection
Photothermal detection
Fluorescence Imaging
Laser-optics

Biology/Biochemistry

Cell Culture
Enzyme Kinetics

Electronics

Architecture design
Board design
FPGA development
Microcontrollers

Programming

Matlab
LabVIEW
Python
C/C++
Verilog HDL

Software Tools

AutoCAD
Solidworks
Comsol Multiphysics

Languages

English
German (B1)
Hindi

Experience

deMello group, ETH Zurich

Doctoral Candidate

Zurich, CH; Jan 2018 – Present

- Conception and development of novel high-throughput absorbance-activated droplet sorting (AADS) platform.
- Ultra high-throughput screening and sorting of enzyme libraries in microfluidic droplets using fluorescence/absorbance detection.
- Design and development of deformability-based cell sorting platform.
- Workflow automation of scientific experiments.
- Student supervision on 3D printed microfluidic devices and phenotyping in droplets.

Juniper Networks

Hardware Engineer

Bangalore, IND; Aug 2013 – Aug 2015

- Ownership of high quality hardware from concept to pre-production.
- Design and verification of control path FPGA.
- Design and testing of high speed PCBs.
- Collaboration with PCB layout, Mechanical, Software, Testing and Manufacturing teams.

Education

Doctoral Candidate

ETH Zurich, CH
Chemical Engineering
Jan 2018 - Present

Master of Science

ETH Zurich, CH
Micro- and Nanosystems
Sep 2015 - Dec 2017
GPA: 5.55/6

Bachelor of Technology

IIIT Allahabad, IND
Electronics and Communication
Aug 2009 - Jun 2013
GPA: 9.35/10

Projects

Microfluidics

High-throughput screening of enzyme libraries

Prof. Andrew deMello, ETH Zurich

Jan 2019 – Present

Screening of Haloalkane dehalogenase and Uronate dehydrogenase enzyme libraries for directed evolution experiments in droplet microfluidics using a fluorescence-activated droplet sorting platform.

Design and development of a novel Absorbance-activated droplet sorting (AADS) platform

Prof. Andrew deMello, ETH Zurich

Oct 2020 – Present

Developing the fastest AADS platform published to date for directed evolution applications.

Design and development of a high-throughput cell-deformability-based sorting platform

Prof. Andrew deMello, ETH Zurich

Aug 2021 – Present

Electrically actuated cell-sorting platform based on cell-deformability in a non-newtonian viscoelastic fluid.

On-demand digital barcodes in droplets

Prof. Andrew deMello, ETH Zurich

Mar 2017 – Dec 2017

Generation of on-demand monomer droplets, photo-polymerization and subsequent loading into an encapsulating droplet for barcoding applications

Microfluidic platform for the large-scale screening of *C. elegans*

Prof. Andrew deMello, ETH Zurich

Apr, 2016 – Jul, 2016

Developed an image-based automated platform for worm loading, trapping using on-chip pneumatic valves and worm release.

MEMS fabrication & characterization

Fabrication and characterization of MEMS acoustic sensors

Prof. Christofer Hierold, ETH Zurich

Feb, 2016 – Aug, 2016

Aided in the development of coupled mass-based MEMS acoustic sensors. The tasks included design of test structures, etching (RIE) of devices, imaging using SEM, and characterization via Laser Doppler Vibrometer.

References

Prof. Andrew deMello
Professor, D-CHAB
ETH Zurich
andrew.demello@chem.ethz.ch

Dhaval Bhodia
Hardware Engineer Senior Staff
Juniper Networks
dbhodia@juniper.net

Fabrication and characterization of a MEMS accelerometer

Embedded MEMS Lab (Practical Course), ETH Zurich

Oct, 2015 – Nov, 2015

Board design & verification

Design of 4X100GE CXP optics based physical interface card

Juniper Networks, Bangalore

Sep, 2013 – Jul, 2015

Designed and tested a high-speed PCB that housed four 100GE CXP optical interfaces, Regenerative repeaters (retimers), a control path FPGA, and associated clocking, power and miscellaneous control devices.

Qualification of 48 port 10 GE interface test module

Juniper Networks, Bangalore

Apr, 2013 – Jun, 2013

Tested PCB which was used for validating various types of interfaces such as 10GE, I2C, SGMII, PCIe and MDIO. The board housed regenerative repeaters for looping back 10GE traffic, control path CPLD, and various power loads.

FPGA design

Implementation of a JPEG encoder on FPGA

Prof. Dr. Neteesh Purohit, IIITA

Jan, 2012 – May, 2012

Developed and implemented an efficient architecture for JPEG image compression encoder with a 2-stage pipeline without using any hardware multipliers (just for fun).

Publications and Conferences

Pietro Binel, **Ankit Jain**, Anna Jaeggi, Daniel Biri, Ashwin Kumar Rajagopalan, Andrew J. deMello and Marco Mazzotti; *Estimating the Three Characteristic Lengths of Plate-like Particles in Suspension*; 2021 AIChE Annual Meeting

Ankit Jain, Gerassimos Kolaitis et al; (In preparation; equal contribution)

Awards

ETH Scholarship	2017
Juniper Networks Hardware Engineering Spot Award	2015
IIIT-Allahabad Academic Excellence Award (2nd highest GPA)	2010
President's Scout (by the President of India)	2007

Extracurricular Activities

Cofounder and President , SKY Campus at ETH	Present
Vice President , Indian Student Association Zurich	Present
Co-organizer , Summer School in Micro and Optical Technologies in Biomedical Science, Fiesch, Switzerland	2018
Slammer , Science Slam Zurich	2019