SHALIN SHAH

Duke University
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INTERESTS

Self-Assembly, DNA Computing, Stochastic Computing, FRET, DNA Storage, Algorithms.

EDUCATION

Duke University, Durham, NC (Expected May'20)
Graduate Student, Electrical & Computer Engineering (ECE) **GPA**: N.A

Dhirubhai Ambani Institute of Info. & Communication Technology, India (May'15)
B.Tech in Information and Communication Technology (ICT) **GPA**: 4.0/4.0

RESEARCH EXPERIENCE

Research Assistant (September'15 - now)
Duke Self-Assembled Systems Group Adviser: Christopher Dwyer

- Developing a compiler for probability distribution curves to generate a Resonance Energy Transfer(RET) circuit from their Continuous Time Markov Chain(CTMC) representation.

Research Assistant (May'13 - April'15)
Laboratory of Natural Information Processing, DA-IICT Adviser: Manish K Gupta

- Worked on building a trans-compiler to convert C code to chemical reactions file (represented in XML) to simulate the dynamics in CAIN.
- Developed an algorithm to compute rational and irrational numbers using DNA Self Assembly. Proposed using $GregoryLeibniz$ infinite series of π to demonstrate computing irrational numbers. Also developed an algorithm to computing square-root of a number and wrote a python script to simulate the assembly growth in XGrow.
- Developed a memory efficient algorithm to encode (and decode) data to DNA bases and implemented it in a cross-platform tool, DNACloud.

Research Intern (December'13 - July'14)
Humanitarian Technology & Image Processing Lab, DA-IICT Adviser : Dr. Anil Roy

- Developed an image processing algorithm to detect hemoglobin disorder - Sickle Cell Anemia. Designed an affordable hardware, which includes microscope with camera support, to fetch magnified image.
- Developed a robust software, ImPatho, using Visual C#, to integrate the detection algorithm, and data collection and analysis tool.

TEACHING EXPERIENCE

Teaching Assistant (July'14 - December'14)
Database Management Systems, DA-IICT Instructor : Minal Bhinse

- Conducted weekly labs along with 5 other teaching assistant's for a class of 240+ students.
- Evaluated exams, class-homework and lab-assignments for this course.

Teaching Assistant (May'13 - June'13)
Android Development Track, IEEE Summer School Instructor : Paresh Mayani

- Helped 50+ students to develop their own android application.
- Helped the students by fixing bugs during class.

PAPER & POSTER PRESENTATIONS

Shalin Shah, Parth Dave, Manish K. Gupta. Counting Real Numbers using DNA Self-Assembly. *In Proc. of 13th International Conference on Foundations of Nano Science: Self-Assembled Architectures and Devices (FNANO)*, Snowbird, Utah, USA. April 11 - 15, 2016 (**paper**)

Shalin Shah, Vijay Dhameliya, Anil Roy. ImPatho - an Image Processing Based Pathological Decision Support System for Disease Identification and a Novel Tool for Overall Health Governance. *In Proc. of IEEE Region 10 Humanitarian Technology Conference (IEEE R10 HTC)*, Chennai, India. August 6 - 9, 2014. (**paper**)

Shalin Shah, Dixita Limbachiya, Manish K. Gupta. DNACloud: A Potential Tool for storing Big Data on DNA. *In Proc. of 11th International Conference on Foundations of Nano Science: Self-Assembled Architectures and Devices (FNANO)*, Snowbird, Utah, USA. April 14 - 17, 2014. (**paper**)

Programming Skills

Programming Skills: Python, MATLAB, C# , C++, JAVA, C, SML, SQL, HTML5, CSS3

Bio-Tools: caDNAno, LBS, Visual DSD, Visual GEC, oxDNA, CAIN

Graphic/Design Tools: Panda3D, OpenGL, Adobe Photoshop, Adobe Premiere, Adobe Flash

Others: OpenMP, Cilk, TBB, CUDA, LaTeX , Git, SVN, Joomla, Bootstrap API, Android SDK, Windows Phone SDK, Windows Store App SDK.

Honors & Awards

- 2016 ECE Department Conference Travel Award.
- 2015 Duke ECE Departmental Fellowship Award.
- 2014 The Best Student Researcher, DA-IICT.
- 2014 IEEE Student Branch Conference Travel Award.
- 2014 IEEE Gujarat Section's SIGHT Conference Travel Award.
- 2012 Best App Development Prize, I-App IEEE I-Fest'12.
- 2011 AMUL Vidya Shree Award.
- 2009 AMUL Vidya Bhushan Award.

Community Service

- **President, Joint Youth Organization of Indians at Duke (JYOTI)** (January'16 - Now)
  JYOTI organizes Indian festivals at Duke for graduate and post-graduate students.

- **Head RJ, Radio Club, DA-IICT.** (January'13 - May'15)
  Radio Club received the best club award in this academic year for revamping RJ shows.

- **IEEE ExeCom Member** (March'14 - May'15)
  Helped IEEE Student Branch organize several tech-events at DA-IICT.

- **Coordinator, Synapcity.** (March'12)
  Helped organize an event of Synapse - the largest techno-cultural festival in Gujarat.

Professional Membership

- Institute of Electrical and Electronics Engineers (IEEE)
- International Society for Nanoscale Science, Computation and Engineering (ISNSCE)

Selected Courses

- **Computational Biology** - Molecular Programming, Integrated Molecular Systems , Natural Computing, Synthetic Biology, Physical Chemistry.
- **Mathematics** - Coding Theory, Probability & Statistics, Discrete Math, Algebra, Calculus.
- **Computer Science** - Compiler Construction, Parallel Programming, Data Structures and Algorithms, Computer Games, System Software, DBMS, Embedded Hardware, Computer Organization, Analog Circuits, Computer Networks.

References

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