

Resume

Aravind Chandrasekaran,
Email: gandhiaravind@gmail.com

Permanent Address

Old Number 2, New Number 18,
Flat B-1, D. N. Plaza,
Fifth Main Road,
Thillai Ganga Nagar,
Chennai - 600061,
Tamil Nadu, India.
Phone: +91-44-22670414

Present Address

336, Life Sciences Building - II,
National Tsing Hua University,
No. 101, Section 2, Kuang Fu Road,
Hsinchu, Taiwan 30013
R.O.C.
Phone: +886-0921201420

Career Objective

- To pursue an academic career aimed at contributing to the advancement of theoretical and experimental understanding of Chemical Engineering
 - To research on basic understanding of biological systems with an ultimate goal of improving therapeutic, disease detection procedures.
-

Academic Record

Master of Science (M.S.)

Feb 2012 - Present

Institution: National Tsing Hua University,
No. 101, Section 2, Kuang-Fu Road, Hsinchu, Taiwan 30013, R.O.C.
Major: Bioinformatics and Structural Biology.
Grade Point Average: 4.3/4.3

Bachelor of Technology (B.Tech.)

2007 - 2011

Institution: Anna University, Chennai, Tamil Nadu, India, Pin-600025.
Major: Chemical Engineering.
Grade Point Average: 8.54/10 **First class with Distinction** (*Cumulative of 8 Semesters*)

Higher Secondary (Twelfth Grade)

2006 - 2007

Institution: Prince Matriculation Higher Secondary School,
84, College Road, Chennai, Tamil Nadu, India. Pin-600114.
Major: Mathematics, Physics, Chemistry, Biology
Percentage: 95.5 (**First class with Distinction**)

Matriculation (Tenth Grade)

2004 - 2005

Institution: Prince Matriculation Higher Secondary School,
84, College Road, Chennai, Tamil Nadu, India. Pin-600114.
Percentage: 91.6 (**First class with Distinction**)

Industrial Experience

July 2011 - Dec 2011

Graduate Engineering Trainee at Reliance Industries Limited, Jamnagar, Gujarat, India. I worked in the *Clean Fuels Project* of Reliance Industries Limited at Jamnagar, India. (world's largest grass roots refinery in terms of barrels of crude processed per day). The principle aim of the project was to improve quality of Light Cycle Oil to be used in the Diesel Blend and Naphtha cuts to be used in Gasoline to Euro-IV standards.

Graduate Record Examination

Total: 1310/1600

Quantitative Section: 790/800 Verbal Section: 520/800 Analytical Writing: 4/6

Test Of English as a Foreign Language

Total: 110/120

Reading: 30/30 Listening: 30/30 Speaking: 23/30 Writing: 27/30

Publications

- Aravind Chandrasekaran, Sudhir R. Jain. Kac's ring: Entropy and Poincaré recurrence. *Physica A* **391**, 3702 (2012).
-

Projects Undertaken

March 2012- April 2012

Project Title: **Implementation of Ewald Summation in MPI, POSIX threads and OpenMP library formats**

Project Guides: Dr. Lee-Wei Yang,
Assistant Professor,
Institute of Bioinformatics and Structural Biology
National Tsing Hua University, Hsinchu, Taiwan
Dr. Jerry Chou
Assistant Professor,
Department of Computer Science
National Tsing Hua University, Hsinchu, Taiwan

Project Description: Ewald Summation was implemented in a 64 core server using MPI, POSIX threads and OPEN MP parallel programming libraries in C. The codes were also analysed for time optimisation and Pthreads version was established to be superior than the others.

May 2011- Dec 2011

Project Title: **Generalized MATLAB code for solving a two-point boundary value problem of an 'n' statesystem formulated using Pontryagin's maximum principle**

Project Guide: Dr. Raj Chakrabarti,
Assistant Professor,
Department of Chemical Engineering
Purdue University, West Lafayette, Indiana, USA.

Project Description: MATLAB code was developed to solve optimization problems with any number of state and costate/control variables using Pontragiyan's maximum principle. Numerical solutions were obtained using Self consistent iterative algorithm for steepest descent method and Shooting method. We are in the process of developing a GUI for these problems.

Jan - April 2011

Project Title: **Plant Design for Manufacture of Selegiline Hydrochloride**

Project Guide: Dr.T.R.Kubendran,
Professor,
Department of Chemical Engineering
Anna University, Chennai, Tamil Nadu, India.

Project Description: For the output of 500 Kg per day, an enviroment friendly process with high efficiency was chosen. Design of reactors and other equipments were computed in addition to Mass and Heat Balances. Process Safety and Process economics were also analysed. (This project was done as part of Final thesis submission for the undergraduate degree.)

Project Title: **Toy model for protein synthesis - Translation of mRNA to protein**

Project Guide: Dr. Charles David Immanuel,
Visiting Faculty,
Anna University, Chennai, Tamil Nadu, India.
Pin-600025.

Project Description: An unsteady state model for translation of mRNA into protein was devised and simulated. Entropy of the process was found to follow a trend similar to the one observed in other biological systems.

May-June 2010

Project Title: **Interplay of Nonlinear Dynamics and Non-Equilibrium Statistical Mechanics**

Project Guide: Dr. Sudhir. R. Jain,
Scientist, Nuclear Physics Division,
Bhabha Atomic Research Centre (BARC), Mumbai,
Maharashtra, India.

Project Description: Kac's ring, a non-equilibrium model devised by Mark Kac was understood and time evolution of entropy of the system was formulated. Simulation of a specific unbiased ensemble of the same was also done. This was done as part of Summer Research Fellowship Programme offered by Indian Academy of Sciences, Bangalore, Karnataka, India. (**published with Physica A.**)

Nov-Dec 2009

Project Title: **Tracking putative tunnels in proteins with CAVER 2.0.**

Project Guide: Prof. Hemalatha Balaram,
Molecular Biology and Genetics Unit,
Jawaharlal Nehru Centre for Advanced Scientific Research
(JNCASR) Bangalore, Karnataka, India.

Project Description: Caver 2.0 is a software devised by Petr Benes and his co-workers to track tunnels (empty voids) connecting the surface and interior of proteins. The work involved finding such channels and comparing them with those reported in literature in Amidotransferase class of Enzymes.

May-June 2009

Project Title: **Propensity calculations of the gene database among members of Plasmodium genera**

Project Guide: Prof. Hemalatha Balaram,
Molecular Biology and Genetics Unit,
Jawaharlal Nehru Centre for Advanced Scientific Research
(JNCASR) Bangalore, Karnataka, India.

Project Description: The work involved writing Macro codes (Visual Basic) to find the number of amino acids in each protein of an organism and also frequency of each of the twenty amino acids in each protein. It also involved propensity calculations of the processed data. The data obtained were plotted and fit to various probabilistic distributions using GraphPad Prism.

Computational Skills

Programming Languages: C, C++

Numerical Software: MATLAB

Parallel Programming Libraries: MPI, OpenMP, Pthreads

Awards and Achievements

- A water filter was designed and presented at Shaastra'08, a national level technical festival organised by Indian Institute of Technology- Madras (IIT-M) and was chosen as the third most innovative design with a cash prize equivalent to 1100 USD.
- Selected for Summer Research Fellowship Programme 2010 (SRFP) by Indian Academy of Sciences (IAS), Bangalore, Karnataka, India.

Co-curricular Activities

- Presented a paper on 'Marangoni Effects Under electric Fields', at Technozion'09 organized by National Institute of Technology, Warangal (NIT-W)
- Participated in ChemSimulation, a simulation workshop on ASPEN Plus at Technozion'09 organized by National Institute of Technology, Warangal (NIT-W)
- Participated in 'Chennai Science Festival-2008', organised by 'Science City', a Government of Tamil Nadu initiative to create awareness among public on science. It involved creating a prototype Bio-Gas reactor for domestic purposes.

Other Interests

- A member of National Social Service Scheme (NSS Scheme) at Anna University, Chennai, India.
- Learnt Western Classical Music (Piano) for four years and am also trained in Indian Classical Music (Carnatic Music).
- Completed first level (Forum I) in French at Alliance Francaise de Madras.
- Taught Mathematics and Science for students of the economically less previlaged strata of society.

Declaration

I do hereby declare that the particulars of information and facts stated herein above are true, correct and complete to the best of my knowledge and belief.

Aravind Chandrasekaran