Naladala Indukala

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EDUCATION

National Institute of Technology Karnataka, Surathkal — India
*Bachelor of Technology in Computer Science and Engineering; **GPA: 9.43/10*** — *Jul 2015 - May 2019*

Swami Ramkrishna Paramhans Junior College, Mumbai — India
Higher Secondary Certificate Examination (Maharashtra State Board); Percentage: 94.62/100 — *Jun 2013 - Apr 2015*

Atomic Energy Central School-2, Mumbai — India
All India Secondary School Examination (CBSE); GPA: 10/10 — *Apr 2012 - Apr 2013*

RESEARCH EXPERIENCE

Cefore: Content Name-based Real-time Video Streaming — INRIA, France & NICT, Japan (offsite)
Guides: Dr. Walid Dabbous (Research Director), Dr. Thierry Turletti — *Sept 2018 - present*

- Emulated topologies (used ns-3, DCE to run CCN mechanism, OpenAirInterface to run LTE on real nodes) for evaluation of the proposed Content-Centric Networking (CCN) mechanism, Cefore
- Testing WiFi handover in ns-3 between two access points and tap device interfacing with node that runs LTE UE
- Intend to submit a paper to IEEE GLOBECOM 2019 after running multiple simulations and analyzing Cefore in hybrid environment

Implementation of TCP Prague in ns-3 — NITK Surathkal
Guide: Prof. Mohit Tahiliani — *Aug 2018 - present*

- Testing implementation of ECN++ in ns-3 which enables Explicit Congestion Notification (ECN) in TCP control packets and retransmissions
- Implementing L4S packet identifier in ns-3 which distinguishes between packets sent by Data Centre TCP (DCTCP) and classic congestion control
- Modifying DCTCP to safely deploy it in public Internet

Integration of R2lab testbed with ns-3 — DIANA Team, INRIA Sophia Antipolis
Guides: Dr. Walid Dabbous (Research Director), Dr. Thierry Turletti — *May 2018 - July 2018*

- Interfaced R2lab testbed nodes with the ns-3 simulator to help researchers in emulating wireless/wired network topologies in R2lab
- Used ns-3 extensions to connect a real Wi-Fi network to a large scale ns-3 simulated network and interfaced with VLC player for video streaming
- Written nepi-ng scripts which automate route configuration, image loading and packet capturing in emulation clients

Corrosion Damage Identification and Lifetime Estimation of Ship Parts — NITK Surathkal
Guide: Prof. Shashidhar Koolagudi — *Feb 2018 - Mar 2018*

- Used histogram comparison to compare pre-corrosion and post-corrosion images to determine the extent of corrosion and estimate the replacement period for various ship parts
- Segmented post-corrosion image using SLIC and classified segments as uncorroded or corroded using Random Forest with an accuracy of 92 per cent (when pre-corrosion image is not available)
- Evaluated the performance of corrosion preventive measures such as galvanization, painting, etc. on different parts of the ship

Simulating DRAM Controller for capturing CPU-GPU interaction — Samsung R&D, India
Guide: Dr. Praveen Kondugari — *May 2017 - July 2017*

- Analyzed open-source gem5 framework and simulated high-level event-based DRAM Controller model using SystemC and TLM 2.0
- Evaluated performance and power of multi-processor system by capturing complex interactions between DRAM Controller, CPUs, GPUs and I/O devices through full system simulation

PUBLICATIONS

- **Cefore: Content Name-based Real-time Video Streaming**
  Kazuhisa Matsuzono, Hitoshi Asaeda, Indukala Naladala, Thierry Turletti and Walid Dabbous
  In progress for submission at IEEE Global Communications Conference (GLOBECOM), 2019

- **Corrosion Damage Identification and Lifetime Estimation of Ship Parts using Image Processing**
  Indukala Naladala, Aparna Raju, Aishwarya C and Shashidhar G. Koolagudi
  Accepted and Presented at 7th IEEE International Conference on Advances in Computing, Communications and Informatics (ICACCI), 2018

- **Implementation and Evaluation of Adaptive Random Early Detection algorithm and its variants in ns-3**
  Indukala Naladala and Adya Kiran
  Accepted at 15th IEEE India Council International Conference (INDICON), 2018

KEY ACADEMIC PROJECTS

Textile Waste Damage Analysis using Artificial Neural Network
Guide: Prof. M. Venkatesan   *Jan 2018 - Apr 2018*

- Analyzed the general trend of the waste produced by textile industries in terms of amount of fabric wasted and predicted how much waste will be generated in future
- Performed feature selection using Fuzzy Sets and designed basic Artificial Neural Network using Predictive Regression Model (optimized using Particle Swarm Optimization)

Dimensionality Reduction using Linear Discriminant Analysis
Guide: Prof. M. Venkatesan   *Jan 2018 - Apr 2018*

- Implemented Linear Discriminant Analysis (LDA) in Python and compared its results with those obtained using the in-built LDA function provided by scikit-learn
- Compared the performance of LDA and Principal Component Analysis (PCA) by individually using both for dimensionality reduction prior to classification using Support Vector Machine (Linear Kernel)

Mini Compiler for C language
Guide: Prof. Santhi Thilagam   *Jan 2018 - Apr 2018*

- Created a compiler for C programming language to generate MIPS32 assembly code
- Coded from scratch, various features like lexical analysis, syntax tree creation, parsing and intermediate code generation

Extension of AQM Evaluation Suite for ns-3
Guide: Prof. Mohit Tahiliani   *Sept 2017 - Nov 2017*

- Automated simulation setup, topology creation, traffic generation, program execution, results collection based on scenarios mentioned in RFC 7928 to evaluate performance of Active Queue Management(AQM) algorithms
- Enabled support of Byte Queue Limits (BQL) and built API to omit undesirable AQM algorithms during evaluation

- **Online Research Internship Portal**
  Guide: Prof. M. Venkatesan   *July 2017 - Nov 2017*
    - Developed a web application using Django framework to match students' research interests with mentors' project proposals
    - Used least regret algorithm to ensure satisfaction of both students and mentors

- **Optimization of Data Link Protocol for Underwater Acoustic Channels**
  Guide: Prof. B. R. Chandavarkar   *Mar 2017 - Apr 2017*
    - Improvised Stop and Wait (S&W) Protocol for half duplex channels by transmitting packets in groups and selectively acknowledging them; performed quantitative analysis for typical acoustic links using MATLAB
    - Determined optimal packet size for transmission which is a function of range, rate and error probability

- **Bank Management Software**
  Guide: Prof. Jeny Rajan   *Mar 2017 - Apr 2017*
    - Developed a web application using Django Framework which registers account holders, allows withdrawal and deposit of money in current and savings accounts and gives different access rights to people with different designations
    - Performed unit testing on software using Google Test library

- **Human Player vs Computer Tic Tac Toe game**
  Guide: Prof. B. R. Chandavarkar   *July 2016 - Dec 2016*
    - Implemented a Human Player vs Computer Tic Tac Toe game in C++ where computer always wins or game ends in a draw taking as less moves as possible (using Minimax algorithm)
    - Used AI to ensure that moves taken are as less as possible, by awarding extra points to game tree path which takes less moves

Notable Academic Achievements

- Selected for summer internship program 2018 at **INRIA (France)**, **Karlsruhe Institute of Technology (Germany)**, **Samsung R&D Institute (India)** and **ECAM Lyon (France)**

- Selected for summer internship program 2017 at **Samsung R&D Institute, India** and **IIT Bombay**

- **All India Rank 879** in Joint Entrance Examination (JEE) Main 2015 among 1.2 million candidates

- Awarded **CSAB Scholarship** by Ministry of Human Resource Development, Govt. of India based on performance in JEE Main, 2015 for 50% tuition fee waiver during undergraduate studies

- Selected for **INSPIRE Scholarship** by Ministry of Science and Technology, Govt. of India based on performance in Higher Secondary Certificate Examination, 2015

- Secured **All India Rank 32** in **National Talent Search Examination (NTSE)**, 2013 conducted by NCERT, Govt. of India among 1 million candidates and awarded **scholarship** for education till graduation

- Awarded **Certificate of Merit** for obtaining A1 grade in all subjects in All India Secondary School Examination, 2013

Extracurricular Activities

- **Finalist** in **DRONA 2017**, a mentorship program for future leaders, conducted by IIM Indore, India

- Active participant in **cleanliness drives, blood donation camps** held at NITK Surathkal

- Represented Atomic Energy Central School in State-level **Table Tennis** and **Throwball** (2011-2013)

- Completed 5 years graduation course in **Bharatnatyam**, an Indian classical dance

- Awarded **Certificate of Merit** for performance in Hindustan Times Essay Writing Competition 2013