

MADHUR BHAIYA

Jaipur, INDIA

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Summary

Hands-on technology leader with 15+ years of experience building and scaling cloud-based SaaS products. Architect and full-stack engineer who writes production code across backend, frontend, and infrastructure layers. Deep SQL and DBA experience with relational databases at scale (query optimisation, replication, ProxySQL). Manages DevOps pipelines end-to-end — CI/CD with Jenkins and GitHub Actions, configuration management with Ansible, and Linux server administration. Built and led engineering teams of 25–40 developers from scratch across two ventures.

Education

- **University of Alberta** Edmonton, CANADA
 - **M. Sc.; Mechanical Engineering** January 2012 - December 2013
 - *Dissertation: An open-source two-phase non-isothermal mathematical model of a polymer electrolyte membrane fuel cell.*
 - *Awards: Mary Louise Imrie Graduate Student Award*
 - *GPA: 3.9/4*
- **Indian Institute of Technology Delhi** Delhi, INDIA
 - **B. Tech.; Mechanical Engineering** August 2005 - May 2009
 - *Awards: Institute Merit-cum-Means Scholarship (for 3 years)*
 - *GPA: 7.2/10*

Work/Research Experience

- **KDK Softwares** Jaipur, INDIA
 - **Chief Technology Officer** September 2020 - Present
 - Started the cloud based SaaS product development in the organization (previously, only desktop products offered by the organization). Cloud product offerings have now scaled to 10,000+ paid customers all over India.
 - Built 5 large scale tax compliance products from ground up, *viz.*, ExpressGST, ExpressTDS, ExpressITR, ExpressReco, SpectrumCloud and, couple of internal applications for license management, CRM, etc.
 - Built a cloud engineering team of 25+ developers from scratch; championed continuous reskilling through a PHP (Laravel) → Golang backend migration and ongoing adoption of AI/LLM-assisted development — upskilling engineers at every inflection point rather than replacing them.
 - Technologies: Golang, PHP, MySQL, Postgres, ReactJS, Python, Nginx, Apache2, ProxySQL, Jenkins, Ansible, GitHub Actions, Git etc.
- **Wholesalebox.in** Jaipur, INDIA
 - **Co-Founder — Director** April 2015 - September 2020
 - Built the complete technology stack of wholesalebox.in, a B2B ecommerce startup (received pre-Series A investment).
 - Product suite includes customer facing ecommerce desktop and mobile (separate codebase) website, Android, iOS applications, internal applications such as CRM, Admin panel for order, product, customer, seller management from backend, seller facing application for order and product management, B2C websites for retailers (customers), etc.
 - Experience of building a business from ground, and scaling it to a 200+ employee team (40+ development team), with thousands of active customers (retailers) all over India.

- Technologies: PHP, MySQL, Postgres, ReactJS, Apache SOLR, Elastic Search, RabbitMQ, React Native, Android, Scala, Python, Nginx, Apache2, Git etc.

Emerson (formerly, Energy Solutions International Inc.)

Calgary, CANADA

Application Specialist, Remote Automation Solutions

April 2014 - July 2015

- Executed real-time transient hydraulic simulation and analysis of oil & gas pipelines and augmented the model by developing better mathematical models such as slack/multiphase analysis.
- Programmed in a large-scale code using Fortran and C++, which incorporates ObjectStore as database management system and advanced object oriented concepts such as MetaClasses.
- Actualized GUI for hydraulic visualization, utilizing Java Swing/AWT classes.
- Coded in Python such as Network Socket Programming, File Management and wrapper programs, for instance, Fail-over management of a leak detection software.
- Configured, and fine tuned numerous pipelines using leak detection softwares such as LeakWarn Classic and PipeWorks. Optimized by reducing model error, hence reduced false alarming rates.
- Promoted Excel Macro coding for automated post processing of monthly results, thereby optimizing time usage; interfaced NIST Refprop package to Excel spreadsheet for generating product definition files for leak detection software.
- Experience of various make systems, in-house problem reporting and ticketing system code, and repository management using CVS.

University of Alberta

Edmonton, CANADA

Research Assistant, Energy Systems Design Laboratory

January 2012 - March 2014

- Crafted a comprehensive mechanistic mathematical model for heat transfer and liquid water transport (thermal, multiphase effects) inside a PEM fuel cell.
- Utilized non-linear continuous Galerkin FEM, adaptive meshing; programmed the model in C++ (30,000+ code lines), and integrated into an open-source fuel cell simulation software. (www.openfcst.org)
- Experience of linux based software development and management; SVN; GIT; Test driven development (Unit Testing); Build Factory; Generic programming (templates); CMake; Parallel processing using MPI.
- Published 1 International Journal paper and 3 International Conference papers.
- Teaching Assistant: Thermo-Fluids Systems Design, Energy Conversion

Hindustan Aeronautics Limited

Bangalore, INDIA

Design Engineer, Aircraft Research & Design Centre

June 2009 - December 2011

- DeNovo design and simulation of aircraft fuel system; complex pipe network design and hydraulic analysis and simulation; flow valves, pumps and LRU design and selection.
- Extensive experience of CAD modelling and using drawing revision control software such as Unigraphics and Teamcenter, in a large-scale development project of a turbo trainer aircraft.
- Initiated innovative approaches such as CFD studies of an aircraft fuel tank for sloshing issues and gauging table determinations.
- Designed, modeled and analyzed engine mounting structure using FEA software.
- Involved in the rigorous ground and flight testing exercise of the fuel system components.
- Gold medal winner in AFTC training module conducted by Indian Air Force, and was chosen to lecture a series on Current aircraft fuel system design practices & innovative approaches to senior executives.

Whirlpool of India Pvt Ltd

Pune, INDIA

Intern, Product Development Centre

May 2008 - July 2008

- Refined a skin condenser based on detailed thermal calculations and designed a detailed CAD model using Pro-E software; Improved energy efficiency by 31%.
- Evolved a non-linear mathematical model for skin condenser and non-adiabatic capillary tubes, and built a simulation tool using MATLAB.

Certifications

1. PIPE - Pipeline Industry Professional Education, November 13, 2014.
2. AFTC (Air Force Technical College), Jalahalli Training Module, **Gold medallist**.

Other Research Experience

- **Undergraduate Research** Indian Institute of Technology Delhi
Department of Mechanical Engineering August 2008 - May 2009
 - Simulated coupled CFD & FEM, utilizing ANSYS, on a diffusion-bonded heat exchanger.
 - Evaluated deformed conditions, causing flow pattern variations and performance reduction.
- **Undergraduate Research** Indian Institute of Technology Delhi
Department of Mechanical Engineering January 2008 - May 2008
 - Developed component and system level mathematical models of a cascade refrigeration system.
 - Developed and programmed an iterative algorithm to simulate the system behaviour with minimum number of input assumptions.
 - Published two conference papers (1 International and 1 National).
- **Undergraduate Research** FMD Auto, FH Dusseldorf, Germany
Department of Mechanical Engineering May 2007 - July 2007
 - Analyzed a combine harvester with stripper header technology using CFD tools, for improvement in power consumption and quality of cut straw particles.

Publications

1. **Madhur Bhaiya**, Andreas Putz, Marc Secanell, “Analysis of non-isothermal effects on polymer electrolyte fuel cell electrode assemblies”, *Electrochimica Acta*, 167:160-171, 2014.
2. **Madhur Bhaiya**, Andreas Putz, Marc Secanell, “A comprehensive single-phase non-isothermal MEA model and analysis of non-isothermal effects”, *ECS Transactions*, 64(3):567-579, 2014.
3. Marc Secanell, Andreas Putz, Phil Wardlaw, Valentin Zingan, **Madhur Bhaiya**, Michael Moore, Jie Zhou, Chad Balen and Kailyn Domican, “OpenFCST: An open-source mathematical modelling software for polymer electrolyte fuel cells”, *ECS Transactions*, 64(3):655-680, 2014.
4. **Madhur Bhaiya**, Michael Moore, Marc Secanell, “Development of a single-phase non-isothermal MEA model for multi-step Oxygen Reduction Reaction (ORR) kinetics”, In *Hydrogen + Fuel Cells 2013*, June 16-19, 2013, Vancouver, CANADA.
5. Lalit M. Pant, Suraj Sharma, Sanjeev Jain, D.S. Samant, **Madhur Bhaiya** and R.S. Aggarwal. “Low Temperature Refrigeration using Natural Refrigerants”. In *ACRECONF*. February 20-21, 2009. New Delhi, INDIA.
6. Lalit M. Pant, **Madhur Bhaiya** and Sanjeev Jain. “Simulation of a Two Stage Cascade Refrigeration System using Natural Refrigerants”. In *National Conference on Refrigeration and Air Conditioning (NCRAC)*. January 8-10, 2009. IIT Madras, Chennai, INDIA.
7. **Madhur Bhaiya**, Andreas Jahr and Holger Happel. “Harvesting-Combine-Flow Simulation Technique”. <http://fhdd.opus.hbz-nrw.de/volltexte/2008/423>. 2007. FH Dusseldorf, GERMANY.

Leadership, Volunteering and Extra curricular

- **V.P. (Communications)**, Mechanical Engineering Graduate Student Association, University of Alberta.
- **Organizing committee member**, Literary Club, Hindustan Aeronautics Limited.
- **Teacher-cum-Volunteer**, National Service Scheme, IIT Delhi.
- Awarded **Best Fresher** of the House for Cultural Activities in 2005-06, IIT Delhi.
- **House Representative**, Literary & Dramatics Club, IIT Delhi.
- **Activity Head**, Sportech'08, IIT Delhi.