Pravin Javheri | **193020052**
Chemical Engineering | **M.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 02-08-1995

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	9.19
Graduation	Savitribai Phule Pune University	VIT, Pune	2018	9.45
Graduation Specialization: Chemical Engineering				
Intermediate	Maharashtra State Board (HSC)	G. D. Sawant College, Nashik	2013	73.67%
Matriculation	Maharashtra State Board (SSC)	Rachana Vidyalaya, Nashik	2011	91.64%

SCHOLASTIC ACHIEVEMENTS

- Secured **96.6** percentile in GATE (Chemical Engineering) amongst **15858** candidates *[Mar'18]*
- Bagged **1st** Position in Industrial Defined Problem, a state level event in Melange, VIT Pune *[Feb'18]*

PROFESSIONAL WORK EXPERIENCE

Process Engineer | Technoforce Solutions (I) Pvt. Ltd., Nashik *[Jul'18 - Jun'19]*

Key Projects	• Venlafaxine Production Plant, India (2 TPD) • Azadirachtin Extraction Plant, Europe (1 TPD)
Roles and Responsibility	• Performed **pump hydraulics**, **line sizing**, **heat-mass balance**, Multi-Effect Evaporator (**MEE**) system sizing, **heat exchanger** sizing in **Aspen EDR** and developed **P&ID**, **2D layout** and **control philosophy** • **Responsible** for preparing **300+** inline instrument **datasheets** (Temp/Pressure/Flow/Level), pump datasheets, **control valve** sizing and datasheets along with **vendor interactions** for the same • Executed **scale-up** calculations for Agitated Thin Film Evaporator/Dryer (**ATFE**), Tubular Evaporators, Short Path Distillation Unit (**SPDU**), Liquid-Liquid Extractor (**LLE**) based on pilot plant trials • **Led** the weekly meetings with sales heads from **Mumbai** and **Germany** and pilot plant heads from **Netherlands**. Prepared **trial guidelines** for pilot plants in Netherlands and India
Initiatives	• **Applied Lean Six Sigma** tool **DMAIC** to correctly commit the delivery date for project and **increased** the **sigma** of the same from **1.9 to 2.5** and **predicted sigma as 4.5** at the end of next 5 years • Prepared an **MS-Excel program** for calculating **extraction stages** that delivered more than **95% accuracy** as compared to the graphical plots and **reduced man-hours** by **80%**

MASTER'S THESIS

Techno-economic Feasibility of Processes involving Chromatographic Reactors
Supervisor: Prof. Sanjay Mahajani, IIT Bombay *[Jan'20 - Present]*

Motivation	• **Cost effective** and intensified **process development** for producing 2,2 Dimethoxy Propane (DMP) • Highly equilibrium controlled reaction makes it **challenging** in terms of **yield** with traditional methods
Current Work	• **Multicomponent Batch Distillation** modelling and numerical solution using **MATLAB** • **Simulation** of batch distillation for separating quaternary mixture using **Aspen Plus** • **Mathematical Model** development for **chromatographic reactor** & numerical solution generation
Future Work	• Process flow synthesis and complete Simulation for the production of DMP • **Optimization** of the process & energy requirements and product **Cost Estimation**
Impact	• **Innovative** approach of using external solvent improves the **conversion** from **10%** to **70%** • **India** to become **self-reliant** for DMP-an important pharmaceutical industry solvent; currently imported

KEY PROJECTS

Process Simulation: 2TPD Dimethyl Ether (DME) Plant | Aspen Plus | *Prof. Sanjay Mahajani, IIT Bombay* *[Jan'20 - Apr'20]*

- **Simulated and compared** various reactor arrangements in the process to **optimize** the **energy** requirements of a DME plant
- Theoretically **reduced** DME **cost** by ~**60%**; can be revolutionary if pitched to Methanol Economy program by **NITI Aayog**

Gas Cracker Unit Simulation |Course Project| DWSIM| *Prof. Sanjay Mahajani, IIT Bombay* *[Jan'20]*

- **Process flow-sheet** synthesis for the process of converting **Shale Gas** (Ethane) into ethylene, propylene & other components
- Simulated the key units from flow-sheet viz., furnace, compressors, **demethanizer**, **deethanizer**, **depropanizer**, **debutanizer**

Evaporator Costing Model using Machine Learning tools |Course Project| *Prof. Amit Sethi, IIT Bombay* *[Feb'20 - Jun'20]*

- **Visualised** the data of parameters affecting cost with **heatmaps, pairplots, jointplots** and applied **Linear Regression** model
- Predicted the **costs** with an **accuracy 85.34%** for Shell and Tube Evaporator and **79.43%** for Agitated Thin Film Evaporator

Catalytic degradation of methylene blue dye with CuO nanoparticles | *Prof. G. D. Gawande, VIT Pune* *[Jan'16 -May'16]*

- **Synthesized** CuO nanoparticles (flakes of **18-25 nm**: XRD) with an **yield** of **93.98%** using aqueous precipitation method
- **Investigated** the **enhanced kinetics** for degradation (**92%**) of methylene blue dye by H_2O_2 in presence of CuO nanoparticles

Spherical Catalyst Model: Concentration & Temp. Profile |Course Project| *Prof. Mani Bhushan, IIT Bombay* *[Aug'19 -Nov'19]*

- Discretization by **orthogonal collocation** (OC) and **orthogonal collocation in finite element** (OCFE)
- **Numerical solution** of coupled partial differential equations (PDEs) and comparative analysis in **MATLAB** using **explicit** method (Adams Bashforth) and **implicit** method (Adams Moulton)

INTERNSHIPS

Summer Research Intern | **ICT, Mumbai** | *Prof. Parag Gogate* *[May'17 - Jun'17]*

- Performed experiments on **Hydrodynamic Cavitation** (HC) to study the effects of various Advanced **Oxidation** Processes (AOPs) along with different catalysts (TiO_2, CuO, ZnO) on degradation of potassium thiocyanate in **wastewater**
- **Achieved 86.5% degradation** in 80 min with a combination of HC + **optimized** amount of **CuO catalyst** + O_3

In-plant Trainee | **Rashtriya Chemicals and Fertilizers Limited** *[Dec'15]*

- Researched on the process and unit operations involved in **Phosphoric Acid Plant** (PAP)
- In-depth study of a **Zero Liquid Discharge** plant that can treat 22.75 Million Litres/Day (MLD) of municipal sewage

LEADERSHIP AND ORGANISATIONAL SKILLS

Executive Member | *Post Graduate Academic Council (PGAC)* | *IIT Bombay* *[May'20 - Present]*

- **Handpicked** and **Leading** a **3-tier team** of **25+** coordinators; entrusted with the academic concerns of **2000+** students
- Devised a **semester-long plan** of institute and departmental events with a **vision** to encourage technical skills for students
- **Revamped** communication within PG community by carrying out the **student outreach program** for **20+ departments**

Central Student Head | *VIT Alumni Association (VITAA)* | *VIT Pune* *[Aug'16 - Aug'18]*

- **Headed** a **committee** of **25** departmental coordinators and **70** volunteers and built an alumni database of **15 years**
- Organised **2 Grand Alumni Meets** for the years 2016 and 2017, hosted **1000+ alumni** in these meets

Joint Secretory | *Chemical Engineering Students Association (ChESA)* | *VIT Pune* *[Aug'16 - Aug'17]*

- **Coordinated** a **team** of **18** heads and co-heads of 7 sub-committees in **planning** and **executing** the events for entire year
- **Standardised** and documented the **procedures** for conducting workshops, seminars, panel discussions

RELEVANT COURSES

- Advanced Reaction Engineering
- Techno-Commercial Aspects of Fine Chemicals
- Advanced Process Synthesis (Audit) (pursuing)
- Artificial Intelligence in Process Engineering (Audit) (pursuing)
- Process Plant Simulation (Audit)
- Computational Methods in Chemical Engineering
- Project Management
- Introduction to Machine Learning (Audit)

SKILLS

- Technical: **Aspen Plus, Aspen EDR, MATLAB, MS-Office, Python, DWSIM, AutoCAD, Minitab**
- Foreign Languages: **German** and **Spanish** (Elementary)

CERTIFICATIONS AND ADDITIONAL COURSES

- **Lean Six Sigma Green Belt** Certification | **KPMG** India *[Oct'19]*
- **Lean Six Sigma Yellow Belt** Certification | **Binghamton University**, New York *[Aug'16]*
- **Python for Data Science and Machine Learning Bootcamp** | **Udemy** *[Aug'20]*
  NumPy, Pandas, Seaborn, Matplotlib, Plotly, Scikit-Learn, Tensorflow

EXTRA-CURRICULAR ACTIVITIES

Field Visits (Course On Wheels)	• Oil and Gas / Refinery: ONGC, Ankaleshwar | Reliance Petroleum Ltd, Jamnagar • Fine & Specialty Chemicals: Deepak Phenolics, Bharuch | Alkyl Amines, Bharuch • Pharmaceutical: Sun Pharmaceutical Industries, Vapi | Alkem Laboratories, Ankaleshwar • Fertilizers and Agrochemicals: GNFC, Bharuch | UPL, Ankaleshwar • Miscellaneous: GIPCL (Thermal Power Plant), ATUL (Dyes, Perfumery), BEIL (Industrial waste management), Nirma Ltd. (Inorganic Chemicals, Soda Ash, Chlor-Alkali)	*[Dec'19]*
Cultural	• **Editorial Board Member**, Crescendo an annual College Magazine of VIT, Pune • Presented in Mehfil, an **open mic poetry** session at VIT, Pune • Certified with **Graphology** Course from ICSP, IIT Bombay	*[Oct'15 - Aug'17]* *[2017, 2018]* *[May'20]*
Social	• Trained 2 **senior citizens** in 'Aatmabodh - the **Computer Literacy** Workshop'	*[Sept'15, Jan'16]*
Technical	• Received a **Letter of Appreciation** from Director, VIT Pune for an **outstanding contribution** in student activities conducted through ChESA	*[Mar'18]*

Scholastic achievements and extracurricular activities are not verified by the Placement Cell