www.linkedin.com/in/asn95
(LinkedIn)

Top Skills

Process Modeling
Supply Chain Optimization
Advanced Process Control

Certifications

Excel Data Visualization: Mastering
20+ Charts and Graphs
Excel Data Visualization: Designing
Custom Visualizations
Data Science Foundations:
Fundamentals
Excel Data Analysis: Forecasting
Working with Real-Time Data in
Excel

Honors-Awards

Best Student Project Award
Research Conclave
Best Young Manager
Winner

Akhil Nair

Advanced Process Controls - Corning Inc | Carnegie Mellon
University (Process Systems Engineering) | Ex-Bharat Petroleum
Corp Ltd
Painted Post, New York, United States

Summary

I currently work as an Advanced Process Controls and Optimization
engineer for Corning Inc's corporate business. I specialize in the
teams core competency of MPC, ML based control and advanced
process modeling encompassing each of Cornings' core industrial
verticals.

I completed my graduate studies in Chemical Engineering at
Carnegie Mellon University with a focus on Process Systems
engineering (PSE) in the areas of Multi criteria decision making,
Hybrid learning and Enterprise wide planning . My research
in Energy systems for improving the circularity of PET plastic
production supply chain using surrogate models and Multi objective
mixed integer optimization (MOMIP) was selected to the Asian PSE
conference of 2022.

I also have 5 years of experience in the Energy industry with
Bharat Petroleum Corporation Limited (BPCL) in the Supply chain
optimization (SCO), Process engineering, Advanced controls (APC)
and Operations (MFG) team where i have contributed and held
roles in refinery Production-planning, Strategy, Data-driven process
improvement & Turnaround management.

Experience

Corning Incorporated
Advanced Process Control Engineer
January 2023 - Present (4 months)
New York, United States

Developing and deploying hybrid-MPC, RTO & low level controls strategies in
the Manufacturing business.

Carnegie Mellon University's College of Engineering

1 year 1 month

Graduate Student Researcher - ChemE PSE lab
April 2022 - January 2023 (10 months)
Pittsburgh, Pennsylvania, United States

Mathematical Modeling & optimization

Software Tester
May 2022 - July 2022 (3 months)
Pittsburgh, Pennsylvania, United States

Course Developer & Software Tester- Ansys Discovery (EXCEED) - FEA/FEM techniques in Transport - (CIT) Summer of 2022.
1.Created HMT based dynamic simulations in Ansys Discovery and checked model fidelity.
2. Tested limits of the Student and research version by running detailed explore models on GPU.
3. Meeting with Ansys Product managers and engineers to plan software interface and convergence improvements.
4.Formulating assignments for HMT course - Fall 2022 at CMU

Graduate Teaching Assistant
January 2022 - May 2022 (5 months)
United States

TA for course 24-618 - Computational Analysis of Transport Phenomenon-MechE (CIT) department Spring 2022.
1.Assisted the instructor with updating course material.
2.Developed tutorials for all the assignments in the course with detailed replication instructions.
3.Graded all student assignments and developed a rubric for awarding grades.
4.Took doubt clearing sessions related to Ansys Fluent/ Design Modeller/ Spaceclaim/ CFX/ Post for graduate students in CIT.
5. Assisted students in end sem projects & research (24 students)

Carnegie Mellon University - School of Computer Science - Language Technologies Institute
Research Candidate
January 2022 - June 2022 (6 months)
United States

MultiComp Lab - Multimodal Machine learning and Advanced facial analysis for cognitive exploration with Blake Martin under PI Dr. Amir Zadeh.
1. Worked on the Atlas platform at CMU for running large datasets based on human voice samples.

2.Worked on Fairseqs M2M-100 model and created a baseline transformer model. (Deep learning)

3. Assisted in creating a toy framework by running a subset of UN derived data using Fairseq model.

Bharat Petroleum Corporation Limited
4 years 3 months

Assistant Manager
June 2020 - August 2021 (1 year 3 months)
Kochi, Kerala, India

Refinery Operations Exposure:

Bottom of the barrel Cracking - Delayed Coker Unit and Petro FCCU (DCC)

Hydro-Treating/Desulphurisation - DHDT/ VGO-HDT/MHC

Sulphur Recovery - Enhanced SRU

Petrochemicals - Acrylic Acid , Acrylates and Oxo- Alcohol

Shift in Charge:

Delayed Coker Unit (DCU) - Handled 44 operators and 8 panel engineers.

Manpower scheduling for operators and officers of the DCU unit.

Process Engineering and APC:

VGO HDT and DCU.

Milestones Achieved & Roles Handled:

1• Led the Reliability & Corrosion monitoring committee from operations & control team at BPCL-KR.

2• Identified as the Digital Champion for Dashboarding & EKONS (BCG - BPCL) initiatives.

3• Performed step tests in HCGO PA & GCU circuits to devise a DMC3 model to optimize utility steam.

4• Analysed Crude behaviour using LSTM-RNN for optimum product despatch & profit maximisation.

5• Delayed Coker Unit Heater DMC based Feedforward APC formulation, testing & implementation .

6• Led equipment reliability planning – Compressor, Pumps & Heater failure forecasts using KPI's for

predictive & prescriptive maintenance.

7• Monitored refinery planning & optimization using Aspen PIMS in the refinery for throughput

estimation to meet demand.

8• Prepared and implemented a Project management tool to control Turnarounds planning using critical
path method to reduce Turnaround time & key in historical time consuming tasks in individual units.

Process Engineering Officer
June 2018 - June 2020 (2 years 1 month)
Kochi, Kerala

Operations team : Delayed Coker (DCU) , Naphtha hydrotreater (NHT-ISOM) and Petro Fluid Catalytic Cracker (PFCCU) Units
Milestones Achieved & Roles Handled:
1• Developed Aspen-HYSYS based steady state simulation for the DCU/ PFCCU units.
2• Liaised with coke drum analysts using LASER MAPPING and PAUT techniques to improve Drum life.
3• Developed ANSYS Fluent based CFD studies to estimate Coke drum stresses and Heater firing needs.
4• Identified as the BPCL Process Safety champion – Compliance auditor , PSI, PHA, MOC, IRIS, EP-TPA.
5• Tested , approved & tailored the Wobbe Index analyser to increase Heater efficiency (89%-96.14%)
6• Completed and approved 38 energy and 14 reliability improvement schemes for the DCU unit revamp,
liaised with FLUOR Inc to modify Blowdown overhead HC recovery design, Rotomol for enhancing
Heater Decoking efficiency & Velan valve for steam optimization.
7• Troubleshooted GCU Stripper Thermosyphon reboiler vapour lock and Heater feed flow hunting
leveraging process tuning.
8. Spearheaded the initiative to explore possibility of increasing FGH yield from NHT-ISOM while ensuring on-spec MS -RON

Manufacturing Operations Engineer
June 2017 - June 2018 (1 year 1 month)
India

1. Line tracing CDU-3 , PFCCU & DCU plants and battery limits to report anomalies in the process plant.
2. Learning and understanding control logics implemented in Emerson/ Yokogawa/Honeywell/Schneider based DCS and modifying inappropriate logic to enhance control.

3. Taking charge in CDU-3 /PFCCU and DCU unit panels and ensuring on-spec product dispatch while exploring OPEX reduction initiatives.

4. Shift in charge training and responsible for 44 operator reportees.

5. Working in sync with the Process engineer for operational issue troubleshooting.

Boston Consulting Group (BCG)
BPCL Representative
November 2019 - January 2020 (3 months)
Kochi, Kerala, India

Energy Conservation (EKONS) initiative in Kochi Refinery:

1. Process visualization with Tableau and Physics based times series models for operations KPI watch.

2. Reviewed detailed design aspects of Refinery WGC control and suggested changes for the control philosophy to optimize antisurge safe openings for 7 process plants saving upwards of $3Million YoY.

3. Proposed OPEX improvement projects of $2.3 million per year in the DCU and VGO-HDT plants

4. Proposed 4 COVID related short time process improvement schemes due to reduced product demand.

Indian Institute of Technology, Bombay
Machine Learning Trainee
January 2019 - January 2019 (1 month)
India

Deputed to IIT Bombay Training- AI & ML for analytics & Refinery process improvement:

1. Used best practices to train and develop test sets and analyze bias/variance for building DL applications, use standard NN techniques, apply optimization algorithms, and implement a neural network in Azure- ML.

2. Used Miniconda to explore ML concepts of regression, clustering, supervised & unsupervised learning.

2. Explored data science concepts for Time series forecasting.

Government Engineering College, Thrissur
11 months

Training Placement Officer - GECT Alumni Cell
June 2016 - April 2017 (11 months)

1. Organized placement drive for 750+ students of 2017-18 batch of GECT.

2. Liaised with industry professionals and alumni to drive the companies to participate in the placement drive.

3. Arranged mock interviews & extra classes for students who required help with interview preparation.

4. Took Technical mock interviews for 2018-2019 batch students - Chemical/ Mechanical and Computer Science and provided them with feedback for improvement.

Student Researcher - IDEATOR GECT (Innovation club)
June 2016 - January 2017 (8 months)
Kerala, India

1. Student investigator working on P2F using carbon zero catalytic-pyrolysis techniques - PI's Dr. Vinod Raphael (Dept of Chemistry) and Dr. Manilal Alathara (Dept of Chemical Engineering).

2. Prepared bifunctional Alumino-silica based catalysts by Solid State mixing, Sol-Gel & Fast impregnation methods & characterized them using TGA & rheometry.

3. Tested fuel yield and its calorific value using qualitative techniques (bomb calorimetry) and performed trials for blending it with commodity Diesel/ Naphtha.

4. Used XRD, FTIR and analysis of constituent peak fluxes in the micro level for assessing the product.

5. Participated in the state research seed round & acquired funding by CERD Trivandrum.

6. Qualified from India for the quarter finals of the NRG COSIA CARBON X cup.

Techfest sponsorship and Program Lead -Dyuthi Technical Fest GECT
November 2016 - December 2016 (2 months)
Thrissur, Kerala, India

1. ROADIES - Facilitator and judge.

2. Dyuthi - Sponsorship Team Lead

Liaised with industries and GEC Alumni for procurement of Techfest funding.

Galfar Engineering & Contracting SAOG
Upstream Process Intern
May 2016 - June 2016 (2 months)
Sultanate of Oman

Assumed Role of a Process intern at GALFAR SAOG - Oman.

1. Field testing engineer for a prototype intelligent pigging device in process lines.

2. Dynamic simulation using OLGA and Unisim for offshore well head & lifting process schemes - Used DWSIM open source simulation software and compared with Unisim for simulation accuracy and contributed to the IIT-B FOSSEE initiative.

3. Calculated multiphase fluid properties and parameters using empirical techniques to compare with simulation based results for solution optimization.

4. Scribe for upstream EPC project - HAZOP , HAZCON & HAZID meetings.

Fertilizers & Chemicals Travancore Limited
In Plant Trainee
June 2015 - June 2015 (1 month)
Kochi

Trainee at FACT - Udyogamandalam section (16 days)

1. Reviewed the HYAM & Ammonia plant P& ID and process description.

2. Attended HSE sessions and line traced the HYAM plant.

3. Learnt basic control system strategies in the DCS and fundamentals of controller tuning.

4. Submitted a CAPE-OPEN based process simulation study report for possible OPEX reduction avenues.

Nakshatra, NIT Trichy
Research Intern
May 2015 - June 2015 (2 months)
Tiruchirappalli, Tamil Nadu

1. Ideation of an online pipeline scavenger and debris remover for cleaning applications.

2. Fluid dynamic studies of the triaxial movement allowing to navigate bends in furnace & process pipes.
Using Ansys Fluent ,CFX and CFD post.

3. Online feedback monitoring of metal loss through IR scanners & deposit removal using hydraulics.

4. Prototyping the device using Raspberry Pi & Arduino open source electronics platform (IDE).

Education

Carnegie Mellon University
Masters in Chemical Engineering (PSE) / MS - Artificial Intelligence · (August 2021 - 2023)

Government Engineering College, Thrissur
Bachelor of Technology - BTech, Chemical Engineering · (2013 - 2017)

Smt Chandibai Himathmal Mansukhani College Post Box No17 Opp
Ulhasnagar Railway Station Ulhasnagar Dist Thane 421 003
 · (2011 - 2013)

Fatima High School
Primary Education, Science · (2000 - 2011)