

PAUL MC NAMARA, PHD

SKILLS

- ELECTRICAL POWER SYSTEMS ANALYSIS: PSSE, load flow (base case development, N-1, short circuit, OPF), dynamic simulation, optimisation and control; primary and secondary frequency & voltage control in mixed AC/DC systems, Demand Response.
- AUTOMATION & DATA MANAGEMENT: 15 years automation experience. Python (6 years), Excel (including VBA), SQL (database management), HTML, Matlab (9 years), AIMMS. Interface design with Django & Flask. Unit testing. Git version control. Courses in machine learning using sklearn. Visualisation with matplotlib, plotly, basemap, some Tableau. Some C++.
- TEAM SKILLS & LEADERSHIP: lead role in coordinating automation activity and providing thought leadership in Eirgrid through Automation and scripting group; developed technical analyses and tools across multifunctional planning teams; mentor junior team members; lead role in tool development; scrum methodologies, git, used in a team context.
- PRESENTATION: reporting of technical analyses using Plain English in reports, journals, etc; translation of complex results into visual representations; extensive technical documentation and video tutorial development experience; regularly present results to groups.
- OPTIMISATION: Mixed Integer Linear Programming, distributed and hierarchical optimisation coordination techniques, Pyomo, AIMMS. Applications in Unit Commitment & Economic Dispatch for power systems, Expansion Planning (water networks), Demand Response, dynamic optimization and control of power systems using Model Predictive Control.
- SIMULATION & CONTROL: Power systems dynamic simulation, modern optimal control and state-space methods, distributed MPC, classical PI approaches.

EXPERIENCE

Eirgrid, Dublin, Ireland – *Data Scientist*

NOVEMBER 2021 – NOW DATA TEAM

- Lead role within the recently formed Data team. Develop remit of team by working with cross functional teams to identify data issues in company and implement reforms across planning and operations teams.
- Propose and implement data science projects within the company.

NOVEMBER 2020 – NOVEMBER 2021 *FUTURE NETWORKS – NETWORK DESIGN TEAM*,
MARCH 2018 – NOVEMBER 2020 *NETWORK PLANNING*

- Lead roles developing extensive Python and PSSE automation: unit commitment, load-flow, OPF & dynamics analyses automation projects.
- Shaping Our Electricity Future, AC analysis: Flagship project released at COP 26. Scenario based expansion planning for grid to identify 52 grid projects to achieve 70% RES-E in the Irish grid (IE+NI) for 2030. Delivered IE base cases, N-1 & OPF analyses; extensive Python/PSSE/PLEXOS processing. Coordination across a large multi-functional team.

- Kildare-Meath 400 KV Reinforcement: worked in cross functional team to deliver AC analysis for Steps 2 and 3 of Eirgrid planning framework.
- Other projects: reduced dynamic system equivalenting, demand opportunities studies, system constraints analyses, maintenance studies.
- Provided mentoring to team members on analysis methodologies.

MARCH 2019 – NOW AUTOMATION AND SCRIPTING GROUP

- Instigated and continue to run the Automation and scripting group: promote dialogue between coders, encourage best practice, host presentations.
- Aided in supervision of development of new Python environment and Azure git repo, liaising between IT, management, and scripting group members.

decisionLab, London, UK – Senior Consultant

MAY 2017 – NOV 2017

- Worked with the optimisation team on MILP water resource planning tool development using AIMMs, Python. Addressed concerns of clients.

UCD, Dublin, Ireland – Senior Researcher – MARCH 2015 – MARCH 2017

Maynooth University, Ireland – Postdoc – MAY 2012 – MARCH 2015

- Power systems, dynamics, and advanced optimization methods research.
- Developed Python modules for the Dome power systems software suite for power systems simulation, control, and optimization using Model Predictive Control. Applied to mixed AC/DC systems and Irish grid model.
- Distributed and hierarchical optimisation approaches developed for applications in Demand Response and VSC-HVDC aided frequency control systems in Matlab.
- Aided in group management, collaborated with and mentored team members.
- Published a number of journal papers, presented at top conferences.

EDUCATION

UCC, Cork, Ireland – BEEE & PhD

SEPTEMBER 2003 – MAY 2007 & SEPTEMBER 2007 – MARCH 2012

- Graduated with first class honours degree in Bachelor of Electrical and Electronic Engineering.
- Awarded prestigious IRCSET PhD scholarship.
- Developed research and a PhD thesis on the use of distributed optimisation and dynamic control techniques for the real time operation of smart electrical grids.
- Published a number of journal papers, presented at top conferences.

PROFESSIONAL MEMBERSHIPS

- Member of Cigre, active in WG B4.81. This WG is focused on the interaction between nearby VSC-HVDC converters, FACTS devices, HV Power electronic devices and Conventional AC equipment.