

Dr Prashanth Nadukandi

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Curriculum Vitæ

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Employment

24/09/2018– **Simulation Tech. Advisor**, *Advanced Mathematics, Repsol Technology Lab, Móstoles, to date Madrid, Spain*
I lead the digitalisation and renewable energy system integration work package in the EU-funded project [Plastics2Olefins](#). I generally work at the interface of computational mechanics and machine learning for applications in the energy industry. Additionally, I lead Advanced Mathematics' communication activities, contribute to TechLab's news bulletin and technical notes/insights, and volunteer in TechLab's cloud management portal's administration.

01/09/2016– **Marie Skłodowska-Curie Fellow**, *School of Mathematics, University of Manchester, 31/08/2018 Manchester, UK*
Numerical analysis and computing the wave-kernel matrix functions.

01/11/2014– **Assistant Research Professor**, *International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain*
31/08/2016 Research on the semi-Lagrangian particle finite element method. Scientific advisor to the spin-off [Compassis S.A.](#).

01/05/2011– **Research Scientist**, *CIMNE, Barcelona, Spain*
31/10/2014 Develop the C++ software kernel of [xFire](#). Synthesize the numerical simulation of fire dynamics.

01/01/2009– **Research Engineer**, *CIMNE, Barcelona, Spain*
01/04/2011 Stabilized finite element methods for transport processes, wave propagation and mixed approximations.

Education

01/2006– **PhD in Computational Mechanics**, *Universitat Politècnica de Catalunya, Barcelona, 02/2011 Spain*, Grade: Excellent cum-Laude
Degree awarded: **May 13, 2011**. Thesis: Stabilized finite element methods for the convection–diffusion–reaction, Helmholtz and Stokes problems.

27/07/2001– **BTech in Civil Engineering**, *Indian Institute of Technology Guwahati, Guwahati, India, 30/05/2005*
Cumulative Performance Index: 8.54, Dr S.D. Sharma Gold Medalist
Degree awarded: **May 30, 2005**. B.Tech project: Study of nonconforming elements in nonlinear finite element analysis of structures.

Invited talks

- 1 “[Matemáticas aplicadas a la gestión de sistemas energéticos](#)”, Conferencia General 2022, [Real Academia de Ciencias Exactas Físicas Naturales](#), **Madrid, Spain**, **01/06/2022**.
- 2 “[Unsupervised learning for reconstruction and deblending of seismic aquisition data](#)”, [J on the Beach](#) 2022 (data science track), **Malaga, Spain**, **27/04/2022**.
- 3 The [EURO PhD School on Data Driven Decision Making and Optimization](#), Institute of Mathematics, University of Seville, **Sevilla, Spain**, **15/06/2022**.
- 4 “[Fast flow simulations using matrix functions](#)”, [STEM for Britain 2018 Poster Competition](#), Mathematical Sciences session (12am–3pm), House of Commons (UK Parliament), **London, UK**, **12/03/2018**.
- 5 4th International Conference on Particle-based Methods (PARTICLES 2015), **Barcelona, Spain**, **28–30/09/2015**.

6 ECCOMAS PhD Olympiad, Young Investigators Conference (YIC2012), **Aveiro, Portugal**, 26–27/04/2012.

Fellowships and Awards

Fellowships

01/09/2016– **Marie Skłodowska-Curie Individual Fellowship**, *European Commission*
31/08/2018 Ref. 702138, H2020-MSCA-IF-2015 - Standard EF, score: 96.20 %, panel: Mathematics.

01/01/2006– **FI-AGAUR Pre-doctoral Fellowship**, *Government of Catalunya, Spain*
31/12/2010 Ref. 2006FI 00836.

27/07/2001– **Institute Merit-cum-Means Fellowship**, *IIT Guwahati*
31/12/2004 Covered tuition and boarding costs at IIT Guwahati.

Awards

30/05/2005 **Dr Shankar Dayal Sharma Gold Medal**, *IIT Guwahati*, Guwahati, India
Awarded at the seventh convocation of IIT Guwahati.

05/07/2003 **Most promising civil engineer award**, *Messrs. Tata Steel*
Special trophy awarded at the Summer Camp 2003 held at IIT Kanpur.

Travel grants

26/04/2012– **ECCOMAS PhD Olympiad travel grant**, *ECCOMAS*
27/04/2012 Young Investigators Conference (YIC2012), Aveiro, Portugal.

05/03/2008– **DEISA grant**, *HLRS, University of Stuttgart*
07/03/2008 Covered travel and stay costs to attend the 6th DEISA training session held at Stuttgart.

03/05/2004– **Internship grant**, *CIMNE*, Barcelona, Spain
26/07/2004 Covered travel and living costs in Barcelona (value €2500). This internship was self-driven, i.e. there were no mobility programs or prior links between IIT Guwahati and CIMNE.

Submitted book manuscript

P. Nadukandi and D. J. Silvester, “Essential Finite Element Approximation”.

Publications

16 articles listed on my ORCID profile: <https://orcid.org/0000-0002-4031-8457>

Teaching and Supervision

Supervisor Undergraduate Final Year Project (2020–21): Francisco Javier Gutiérrez Oliet, “Compressed Sensing para adquisición sísmica”, Facultad de Matemáticas, Universidad Complutense de Madrid.

Lecturer **MATH 46052/66052**: Approximation Theory and Finite Element Analysis.
Level 4, delivered in 2016–17 and 2017–18. I lead the piece on Approximation Theory. I made an original exposition, prepared lecture notes and led the assessment and feedback of my part.
URL: https://personalpages.manchester.ac.uk/staff/david.silvester/MTx6052_approx_theory.pdf

Tutor MATH 19852: Mathematics OJ2 (service course offered by the School of Mathematics).
Level: Foundation Year, delivered in 2016–17.
I led a group of 28 students.

Supervisor Foundation Year Project (2017–18): Stiff systems of ordinary differential equations.
I supervised a group of 3 students.

Public engagement

20/09/2017 **Science Uncovered 2017**, *Manchester Museum*, European Researchers' Night, Marie Skłodowska-Curie Actions
I led the following activities (Mathematics).

- I Love Research Q&A (11am–2pm).
Audience: Primary school children and general visitors to the museum.
Title: Simulation of fluid flows.
- Research station (5pm–10pm).
Audience: Adults, Families and University students.
Title: Numerical Approximations: what are they for and why we care?

21/10/2017 **Science Spectacular 2017**, *Withworth Hall*, University of Manchester, Manchester Science Festival 2017
I was invited to lead a research station (11am–4pm).
Audience: Families.
Title: Pursuit curves.

Service

2017–2018 **Organizer**, *Numerical Analysis and Scientific Computing Seminars*, School of Mathematics, University of Manchester, UK

2017–2018 **Research staff representative**, *Athena SWAN Committee*, School of Mathematics, University of Manchester, UK

01/05/2011– **Scientific advisor**, *Compass Ingeniería y Sistemas, SA*, Barcelona, Spain

31/08/2016 Web: <http://www.compassis.com>

2013– **Reviewer**
IMA Journal of Numerical Analysis, Journal of Computational Physics, Journal of Computational and Applied Mathematics, Journal of Applied Mathematics and Computing, International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, Mathematical Problems in Engineering, Computational Particle Mechanics and CITRevista.

23/11/2016 **External examiner**, *PhD Thesis*, Departament de Mecànica de Fluids, Universitat Politècnica de Catalunya, Spain
Aditya Mushyam, “Effects of flow control on flow past bluff bodies”.

26/09/2013 **External examiner**, *PhD Thesis Proposal*, Departament de Resistència de Materials i Estructures a l'Enginyeria, Universitat Politècnica de Catalunya, Spain
Guillermo Casas, “A New Numerical Method for Particulate Flows”.

Professional development

25/11/2017 **Workshop on Scientific Communication**, *Society of Spanish Researchers in the UK*, Instituto Cervantes, Manchester, UK
Trainers: Luis Quevedo (journalist, documentarist, science communicator)
Training: Scientific communication to the general public with a focus on audio-visual media (interview with journalists).

14/11/2017 **Public engagement in practice**, *The Royal Society*, Museum of Science and Industry, Manchester, UK
Training: Key challenges and approaches in public engagement, planning an evaluation strategy.

20/09/2017 **Science Uncovered 2017 Training Session**, *Manchester Museum*, Manchester, UK
Training: Learn the skills to communicate science to people who are not familiar with research.

Jan 2017 **New Academics Programme**, *Faculty of Science and Engineering*, University of Manchester, UK

Oct 2016 **Teaching for Researchers**, *Faculty of Science and Engineering*, University of Manchester, UK

05/03/2008– **DEISA training session**, HLRS, University of Stuttgart, Germany

07/03/2008 6th Distributed European Infrastructure for Supercomputing Applications (DEISA).
Training: Introduction to the DEISA Infrastructure, the software tools that are used to access it and seminars on supercomputing applications.

03/05/2004– **Summer Internship**, CIMNE, Barcelona, Spain

27/07/2004 Training: Stabilized finite-element methods and simulation of incompressible flows.

06/06/2003– **Summer Camp 2003**, Indian Institute of Technology Kanpur, Kanpur, India

05/07/2003 A month-long Industry-Academia Interaction camp where 35 selected students were imparted training in the latest and advanced techniques in civil engineering.

Language skills

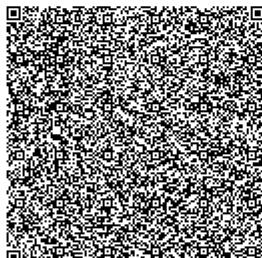
- Fluent in English, Spanish, Malayalam (mother-tongue), Hindi and Telugu.
- Polish (level A2) and Catalan (level A1).

Levels A1 and A2 correspond to a basic user according to the Common European Framework of Reference for Languages.

Computer skills

- Programming: C, C++, OpenMP, MPI, Python, MATLAB and Maple.
- Text processing: Vim, LaTeX and MS Word.
- Presentation: Beamer and MS PowerPoint.
- Graphics and web design: TikZ/PGF, xHTML/CSS.
- Operating systems: Windows and Linux.

C++ software development skills



Additional information

Other merits

- **Finalist**, 2018 STEM for BRITAIN event, Mathematical Sciences session, Portcullis House (UK Parliament), Westminster, 12/03/2018.
- Nominated for **Outstanding Public Engagement** at the Faculty of Science and Engineering's **Better World Showcase 2018** event. My nomination URL: www.se.manchester.ac.uk/media/EPS/EPSfaculty/SocialResponsibility/p30.pdf
- Among the **six finalists** in the SEMNI award for the best PhD thesis in 2011.
- Among the **four** PhD theses representing Spain to participate in the ECCOMAS PhD Olympiad held at the Young Investigators Conference (YIC2012), Aveiro, Portugal.
- Head of the media management committee of the IIT Guwahati technical (Techniche 2002–03) and cultural (Alcheringa 2003–04) festivals.
- General Secretary (2013–2014) of the Association of Malayalees in Barcelona.