

## CURRICULUM VITAE

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### EDUCATION SUMMARY

2012 MSc Aerospace Engineering The University of Manchester, UK.  
2011 B.Tech Aerospace Engineering SRM University, India.

### EXPERIENCE SUMMARY

ORGANIZATION	DESIGNATION	DURATION
LEGI, Université Grenoble Alpes, France	Marie Curie ESR / PhD Researcher	Oct 2015-Sept 2018
PZL Świdnik-Leonardo Helicopters, Poland	Marie Curie ESR / Designer	April 2014-April 2015
ICFAI University Tripura, India	Faculty Member, Mechanical Engg.	Jan 2013 - July 2013
Kwest Research, UK	Research Interviewer	Jan 2012 - Sept 2012
ANSH (NGO), India	Volunteer Tutor for Literacy	Mar 2010 - Jan 2011

### HONORS & AWARDS

1. Marie Skłodowska-Curie actions (MSCA) Research Fellowship  
October 2015-September 2018, Horizon 2020 programme, European Commission.
2. Marie Skłodowska-Curie actions (MSCA) Research Fellowship  
April 2014-April 2015, FP7 programme, European Commission.
3. Fully-funded Scholarship: 2016 International Graduate Summer School in Aeronautics and Astronautics,  
Beihang University (BUAA), Beijing.

### RESEARCH INTEREST

Cavitation erosion; Numerical methods for compressible and turbulent flow; High performance computing; Aircraft and helicopter rotor aerodynamics; Active flow control techniques; Computational Aero-Acoustics.

### EXPERIENCE

#### October 2015-September 2018:

#### **LABORATORY OF GEOPHYSICAL AND INDUSTRIAL FLOWS (LEGI) UNIVERSITÉ GRENOBLE ALPES, FRANCE**

(Marie Curie Early Stage Researcher / PhD Researcher)

- Thesis title '**Simulation of cavitation erosion by a coupled CFD-FEM approach**'.
- Fully coupled fluid-structure methodology for the dynamics of bubble collapse close to a wall surface to account for the material response.

- Simplified one way coupling model of material fatigues and mass loss from the pressures induced during the collapse of multiple bubbles using a FEM code.

**April 2014-April 2015:**

**PZL ŚWIDNIK – LEONARDO HELICOPTERS, POLAND.**

(Marie Curie Early Stage Researcher)

- Project IMESCON in the area of active flow control techniques and rotor performance prediction.
- CFD investigation of airfoil aerodynamic characteristics.
- Evaluation of rotor dynamic stall characteristics and active flow control systems on aerodynamics.
- Aero-elastic simulation of hovering rotor.
- Summer school training on helicopter flight mechanics, trimming, stability and control, autopilot model, Parallel Programming with MPI.

**January 2013-July 2013:**

**ICFAI UNIVERSITY TRIPURA, AGARTALA, INDIA.**

- (Faculty Member, Mechanical Engineering)
- Handled courses on structures and properties of materials, fluid mechanics experimental techniques.
- Projects on engineering design and flow analysis.

**EDUCATION**

**September 2011- September 2012:**

**THE UNIVERSITY OF MANCHESTER, UK.**

(MSc Aerospace Engineering)

- **First Class**
- Projects on UAV development, numerical modelling and acoustic prediction techniques.

**August 2007-June 2011:**

**SRM UNIVERSITY, INDIA.**

(B. Tech Aerospace Engineering)

- **First Class with Distinction**
- Appreciation award in the module of Creativity, Innovation and New Product Development.
- Member of Society of Automotive Engineers.
- Public Relation Officer, Aerospace Engineers Association.

**April 2000-May 2007:**

**KENDRIYA VIDYALAYA, ONGC, AGARTALA, INDIA.**

(Senior School Certificate & Secondary School Examination)

- All India Senior School Certificate Examination (AISSCE-2007) - (First Class).
- All India Secondary School Examination (AISSE-2005) - (First Class).
- Merit certificate in All India Talent Search Examination, 2004.
- Junior Diploma in Art recognised by WB State Academy of Dance, Drama, Music and Fine Arts.

## SCIENTIFIC PROJECTS

- **CaFE** (*Development and experimental validation of computational models for Cavitating Flows, surface Erosion damage and material loss*).  
A Marie Curie ITN project with the aim of developing numerical tools for investigating hydrodynamic cavitation erosion. Insight into the detailed bubble collapse mechanism leading to surface erosion will be realised through DNS simulations. An iterative coupled CFD-FEM methodology will allow a realistic prediction of the damage and material removal.
- **IMESCON** (*Innovative MEthods of Separated flow CONtrol in Aeronautics*).  
A Marie Curie ITN project in the area of active flow control and new helicopter technology combining expertise from fluid dynamics, Micro Electro Mechanical Systems (MEMS), and numerical modelling of coupled physical phenomena. Overall objective of project was to develop an approach for coupled multi physics simulation and optimization of piezoelectric-driven Active Flow Control Systems (AFCS) used in helicopter rotor.
- **MSc Dissertation** - *Acoustic liners on modern turbofan engines*.  
The role of acoustic liners in the duct of large bypass turbofan engines was investigated and a practical simulation program was developed, which predicts the fan noise trajectories of commercial aircraft engines on several different flight profiles.
- **Design Project** - *Development of a generic design process for man portable UAV systems*.  
Acted as Project Manager (UAV design group), Group Leader (CAD) & Aerodynamics Team Member. Developed and validated a generic design process for the production of fixed wing UAVs for autonomous flight vehicle training applications, with responsibilities for project planning, resource management, design definition and analysis, model parameterisation and aerodynamic analysis.
- **B. Tech Dissertation** - *Three Dimensional Numerical Study in an Afterburner of a Gas Turbine Engine* (Gas Turbine Research Establishment, DRDO).  
Studied various configurations of the flame holder while varying blockage factor and analysed flow behaviour in an afterburner for non-reacting flow conditions.
- **Aircraft Design Project**-*Multirole combat aircraft*.  
Designed a multirole combat aircraft capable of tactical strike, air reconnaissance, air defence, and maritime roles and performed aerodynamic and structural analyses.
- *Overhaul of RD-33 turbofan engine* (Hindustan Aeronautics Limited, Engine Division, India).  
Performed overhaul of RD-33 twin shaft turbofan engine with afterburner used in jet fighters.

## PUBLICATION

1. Sarkar, P., Raczynski, R. (2017) Gurney Flap Force Calculation .In: Doerffer, P., Barakos, G.N., Luczak, M. (eds.) *Recent Progress in Flow Control for Practical Flows: Results of the STADYWICO and IMESCON Projects*. Springer International Publishing, ISBN 978-3-319-50567-1 (In Press).
2. Berezin, I., Sarkar, P., and Malecki, J. (2017) Fluid-structure interaction simulation .In: Doerffer, P., Barakos, G.N., Luczak, M. (eds.) *Recent Progress in Flow Control for Practical Flows: Results of the STADYWICO and IMESCON Projects*. Springer International Publishing, ISBN 978-3-319-50567-1 (In Press).
3. Sarkar, P. (2013) Theoretical noise prediction in a lined circular duct in the presence of fluid flow. *Proceedings of The Acoustics 2013 New Delhi Conference*.