ANTONIO E. FORTE

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CAREER PATH

King's College London, UK *August 2021 - Present*
Lecturer in Engineering — *Robotic Materials, Human-Matter Interface, Wearable Robotics*
Head of RADlab — *Reconfigurable and Adaptive Designs Lab.*
Current PhD students: Mostafa Mousa, Ashkan Rezanejad, Ibrahim Barakat, Yuxuan Wang

Harvard University, USA *October 2018 - August 2021*
Marie Curie Postdoctoral Fellow in the School of Engineering and Applied Sciences — *Architected Materials, Mechanical Metamaterials, Soft Systems, Inverse Design.* Advisor: Prof. Katia Bertoldi

Imperial College London, UK *January 2016 - September 2018*
Postdoc in Bioengineering — *Signal Processing & Machine Learning.* Advisor: Prof. Tobias Reichenbach

Imperial College London, UK *October 2011 - December 2015*
PhD in Mechanical Engineering — *Soft Matter Design & Synthesis, Biomechanics, Finite Element Modelling.* Advisors: Prof. Daniele Dini, Prof. Ferdinando Rodriguez y Baena

AWARDS AND GRANTS

2023 – *UKRI Future Leaders Fellowship*

2023 – *EPSRC Impact Accelerator Award* - Helix EXtrusion GRIPper: HEXGRIP

2022 – *MRC Impact acceleration fund* - Wearable system for the early detection of heart valve diseases (Co-I)

2018 – *Marie Curie Individual Fellowship (GLOBAL)* for Harvard University

Other: Faculty Engagement Award, Departmental Recognition Award, NMES Faculty Teaching Award, FHEA, King's Artists Residency Award, various travel grants & outstanding student awards.

TEACHING EXPERIENCE

Module Lead – King's College London, UK (2022/23/24, Spring term)

- Designed, taught and marked the Finite Element Analysis module (6CCE3FEA, ∼80 students)

Module Lead – King's College London, UK (2021/22/23/24, Autumn term)

- Designed, taught and marked the Design:Empowerment module (5CCE2EMP, ∼240 students)

Group Project Supervisor for MSc Robotics – King's College London, UK (2023/24, all-year)

- Leading MSc students on building and testing of wearable robotic metamaterials (7CCEMRGP)

Supporting Lecturer – King's College London, UK (2021-24, Autumn term)

- Designed, taught and marked the tutorials for the Materials module (5CCE2MAT, ∼80 students)
- Designed and taught CAD tutorials for the Design:KEP module (4CCE1KEP, ∼240 students)
- Supervisor, guided groups of students in their boat designs (4CCE1MCP, ∼240 students)
- Marker for Mechanics module (4CCE1MEC, ∼200 students)

Assistant Instructor – Harvard University, US (2020, Autumn term)

- Taught (with Prof Bertoldi) Computational Solid and Structural Mechanics (ES128, ∼30 students)

Teaching Assistant – Imperial College, UK (2017, Autumn term)

- Taught (with Prof Reichenbach) the Statistics and Data Analysis module (BE9-MSTDA, ∼80 students)

Teaching Assistant – Imperial College, UK (September 2011 – December 2015)

- Taught (with Prof Dini) and marked the Stress Analysis module (ME1-HSAN, ∼100 students, 2 terms)

- Supported laboratory sessions for Materials module (ME1-HMATL, 1 term)

Student Mentoring and Supervision

- King's College London, UK (August 2021 – Present)
  - 1st supervisor, PhDs: Mostafa Mousa, Ashkan Rezanejad, Ibrahim Barakat, Yuxuan Wang
  - 2nd supervisor, PhDs: Charlotte Palmer, Yulan Lu, Kasandra Arcovio, Mengxuan Li
  - Supervisor of 4 UG Research Fellows: Lara Jaber, Noor Hashmi, Yeji Sohn, Asma Zenagui
  - Supervisor for 12 UG, 8 MSc Individual Projects, 2 MSc Group Projects (∼10 students)
- Harvard University, US (October 2018 – August 2021)
  - Co-supervised 5 PhDs, 2 UG and 4 MSc visiting students
- Imperial College, UK (September 2011 – October 2018)
  - Co-supervised 5 PhDs, 3 UG and 5 MSc students

PROFESSIONAL AND ADMINISTRATIVE ROLES

- **Scientific Peer Review**

  Biomechanics and Modeling in Mechanobiology — Annals of Biomedical Engineering — Journal of the Mechanical Behavior of Biomedical Materials — Biomedical Physics and Engineering Express (BPEX) — International Journal of Solids and Structures — Materials Science & Engineering C — Materials & Design — Progress in Additive Manufacturing — Journal of Biomechanics — Materialia — IEEE Access — IRBM — Journal of Physics D: Applied Physics — Soft Matter...

- **Service Roles for funding bodies, scientific meetings and outreach**
  - Reviewer for EPSRC, Springboard Awards, and European Commission
  - Organizer of the *"Functionality through non-linearity"* session at APS March Meeting
  - Organiser of the *Creative Differences Workshop*, in collaboration with the London Biennale
  - Member of the UKMMN, APS, IEEE, RAS, Automorph Network...
  - Testimonial for British Science Week, Pint of Science, European Researcher Night, MEETmeTONIGHT...
- **KCL Service Roles**
  - Programme Coordinator for the 2nd year Undergraduate Engineering Degree
  - Shortlisting and recruitment panels for PDRAs and Academic positions
  - Procurement of Departmental equipment (Instron Tensile Testing Machine, Carbon 3D printer, etc)
  - PhD Upgrade Examiner (panel chair)

INVITED TALKS (LAST 3 YEARS)

16th Hamlyn Symposium on Medical Robotics 2024, 06/24 — Newcastle University (British Applied Mathematics Colloquium, 04/24) — Imperial OncoEng Conference 01/24 (keynote speaker) — Oxford University (5th UK Robot Manipulation Workshop, 01/24) — Oxford University (Solid Mechanics and Materials Seminar, 11/23) — UCL (Lighten workshop, 10/23) — University of Bath (Shape Morphing Metamaterials Workshop, UKMMN, 09/23) — Somerset House (Automorph Workshop, 06/23) — University of Maryland (Tubaldi group, 01/23) — University of Bristol (Softlab Seminar Series, 06/22) — UCL (Lighten workshop, 05/22) — SIAMM21, 02/21 (keynote speaker) — UCL (Dept of Mech Eng, 01/21) — Warwick University (Dept of Mech Eng, 10/20) — MSE2020, 09/2020 (keynote speaker) — London South Bank University (Dept of Mech Eng, 07/20) — EMI2020 (Columbia University, 05/20 - cancelled due to COVID) — Boston University (Dept of Mech Eng Seminar, 03/20) — Imperial College London (Bioengineering Dept, 02/20) — Boston University (Moss Lab Seminar Series, 01/20)

PUBLICATIONS

Figure 1: Awarded journal covers and Google Scholar metrics (04/2024)

(#Corresponding Author; †Joint First Authorship; Last Author; [*]Highlighted publications)

1. [*] **A. E. Forte#**†, D Melancon†, M Zanati, M De Giorgi, K Bertoldi# (2023). Chiral Mechanical Metamaterials for Tunable Optical Transmittance. *Advanced Functional Materials*
2. D. Melancon†, **A. E. Forte**†, L. M. Kamp, B. Gorissen, K. Bertoldi(2022). Inflatable Origami: Multimodal Deformation via Multistability. *Advanced Functional Materials*
3. M. C Fernandes, S. Mhatre, **A. E. Forte**, ... & K. Bertoldi (2022). Surface texture modulation via buckling in porous inclined mechanical metamaterials. *Extreme Mechanics Letters*.
4. [*] **A. E. Forte#**, ... & K. Bertoldi# (2022). Inverse Design of Inflatable Soft Membranes Through Machine Learning. *Advanced Functional Materials*.
5. A. Mazier, A. Bilger, **A. E. Forte**, ...& S. P. A. Bordas (2022). Inverse deformation analysis: an experimental and numerical assessment using the FEniCS Project. *Engineering with Computers*.
6. B. Deng, M. Zanati, **A. E. Forte**, K. Bertoldi (2022). Topological solitons make metamaterials crawl. *Physical Review Applied*.
7. L. Jin, **A. E. Forte** & K. Bertoldi (2021). Mechanical Valves for On-Board Flow Control of Inflatable Robots. *Advanced Science*.
8. M. Terzano, A. Spagnoli, D. Dini, **A. E. Forte** (2021). Fluid–solid interaction in the rate-dependent failure of brain tissue and biomimicking gels. *Journal of the Mechanical Behavior of Biomedical Materials*.
9. A. Dine, E. Bentley, L. A. Poulmarck, D. Dini, **A. E. Forte#**, Z. Tan# (2021). A dual nozzle 3D printing system for super soft composite hydrogels. *HardwareX*.
10. B. Deng†, S. Yu†, **A. E. Forte**, V. Tournat, K. Bertoldi (2020). Characterization, stability and application of domain walls in flexible mechanical metamaterials. *PNAS*.
11. [*] L. Jin†, **A. E. Forte**†, ... & K. Bertoldi (2020). Kirigami-inspired inflatables with programmable shapes. *Advanced Materials*
12. Z. Tan, J. P. Ewen, **A. E. Forte**, S. Galvan, E. De Momi, F. Rodriguez y Baena, D. Dini (2020). What does a brain feel like?. *Journal of Chemical Education*.
13. M. Saiz-Alia, **A. E. Forte** & T. Reichenbach (2019). Individual differences in the attentional modulation of the human auditory brainstem response to speech inform on speech-in-noise deficits. *Scientific Reports*
14. G. Carpenter, ... **A. E. Forte**, ... & S. K. Baier (2019). A study of saliva lubrication using a compliant oral mimic. *Food Hydrocolloids*
15. G. Binkhamis, **A. E. Forte**, ... & K. Kluk-De Kort (2019). Speech auditory brainstem responses in adult hearing aid users: Effects of aiding and background noise, and prediction of behavioral measures. *Trends in Hearing*
16. O. Etard, ... **A. E. Forte** & T. Reichenbach (2019). Decoding of selective attention to continuous speech from the human auditory brainstem response. *Neuroimage*
17. Z. Tan, ... & **A. E. Forte#** (2018). Composite hydrogel: A high fidelity soft tissue mimic for surgery. *Materials & Design*
18. Z. Tan, ... & **A. E. Forte#** (2017). Cryogenic 3d printing of super soft hydrogels. *Scientific Reports*
19. **A. E. Forte**, O. Etard & T. Reichenbach (2017). The human auditory brainstem response to running speech reveals a subcortical mechanism for selective attention. *eLife*
20. **A. E. Forte#**, S. Gentleman & D. Dini (2017). On the characterization of the heterogeneous mechanical response of human brain tissue. *Biomechanics and Modeling in Mechanobiology*
21. **A. E. Forte#**, S. Galvan & D. Dini (2017). Models and tissue mimics for brain shift simulations. *Biomechanics and Modeling in Mechanobiology*
22. [*] **A. E. Forte#**, ... & D. Dini (2016). A composite hydrogel for brain tissue phantoms. *Materials & Design*
23. A. Leibinger, **A. E. Forte**, ... & F. Rodriguez Y Baena (2016) Soft tissue phantoms for realistic needle insertion: a comparative study. *Annals of Biomedical Engineering*
24. [*] **A. E. Forte**, ... & J.G. Williams (2015). Modelling and experimental characterisation of the rate dependent fracture properties of gelatine gels. *Food Hydrocolloids*
25. Das Neves Borges, **A. E. Forte**, ... & M. Marenzana (2014). Rapid, automated imaging of mouse articular cartilage by microCT for early detection of osteoarthritis and finite element modelling of joint mechanics. *Osteoarthritis and cartilage*