

DAVID GARCIA MATO

BIOMEDICAL ENGINEER

Madrid, Spain dgmato.github.io linkedin.com/in/davidgarciamato github.com/dgmato



EXPERIENCE

Research Engineer at **Universidad Carlos III de Madrid**
Department of Bioengineering and Aerospace Engineering

September 2015 – Ongoing Madrid, Spain

- Software development for computer-assisted maxillofacial surgery.
- Surgical navigation and augmented reality in surgical oncology.
- Medical image processing, tracking systems, 3D printing.
- Supervisor: Javier Pascau

Research Engineer at **Queen’s University**
Laboratory for Percutaneous Surgery (Perk Lab)

March 2019 – April 2019 Kingston, ON, Canada

- Surgical simulation and training based on eye tracking device.
- Supervisor: Gabor Fichtinger

Research Engineer at **Children’s National Medical Center**
Sheikh Zayed Institute for Pediatric Surgical Innovation

January 2019 – March 2019 Washington, DC, United States

- Automatic virtual planning in pediatric neurosurgery.
- Quantifying overcorrection in craniostylosis reconstruction planning.
- Supervisor: Marius George Linguraru

Research Engineer at **Queen’s University**
Laboratory for Percutaneous Surgery (Perk Lab)

November 2016 – May 2017 Kingston, ON, Canada

- Development of 3D gaze tracking using eye and head pose tracking
- Gaze tracking for skill assessment in US-guided needle insertions.
- Supervisor: Gabor Fichtinger

Research Engineer at **Medical Imaging Laboratory**
Hospital General Universitario Gregorio Marañón

June 2015 – July 2015 Madrid, Spain

- Ultrasound-guided breast tumor resection using based on EM tracker.
- Desktop 3D Printing to improve surgical navigation in acral tumors.

Internship at **Medical Imaging Laboratory**
Hospital General Universitario Gregorio Marañón

February 2015 – June 2015 Madrid, Spain

- Multicamera tracking system for intraoperative radiation therapy.

LIFE PHILOSOPHY

“Winners are not people who never fail but people who never quit”

EXPERTISE

- Computer-Assisted Interventions
- Medical Imaging
- Tracking Systems
- 3D Printing
- Data Analysis
- Research

EDUCATION

Ph.D. in Biomedical Engineering
Universidad Carlos III de Madrid

Oct 2016 – Ongoing Madrid, Spain

M.Sc. in Multimedia and Communications

Universidad Carlos III de Madrid

Sep 2015 – Sep 2016 Madrid, Spain

B.Sc. in Biomedical Engineering
Universidad Carlos III de Madrid

Sep 2011 – Jun 2015 Madrid, Spain

International Mobility Program
Queensland University of Technology

Jul 2014 – Dec 2014 Brisbane, Australia



STRENGTHS



- Hard-working
- Problem Solving Skills
- Eye for detail
- Creativity
- Teamwork
- Constant Learner
- Natural Curiosity



LANGUAGES



- Spanish
- English
- French

TEACHING



Course: Advanced Topics on Medical Imaging
B.Sc. in Biomedical Engineering, Universidad Carlos III de Madrid
 January 2016 – Ongoing  Madrid, Spain



Course: Image Processing and Reconstruction
B.Sc. in Biomedical Engineering, Universidad Carlos III de Madrid
 January 2016 – Ongoing  Madrid, Spain



Tutorial: Deep learning and computer vision for real-time procedure annotation
Computer Assisted Radiology and Surgery conference 2019
 June 2019  Rennes, France



Course: Medical imaging techniques and applications
Improvements in Education Quality and Innovative applications in Biomedicine, Universidad Carlos III de Madrid
 November 2018  Madrid, Spain



Course: Image Processing with ImageJ
Instituto Nacional de Técnica Aeroespacial (INTA)
 November 2018  Madrid, Spain



Tutorial: Rapid Prototyping of Ultrasound-Guided Intervention Systems
Medical Image Computing and Computer-Assisted Interventions 2018
 September 2018  Granada, Spain

Tutorial: Rapid prototyping of image guided therapy applications on open sources software platform
Computer Assisted Radiology and Surgery conference 2018
 June 2018  Berlin, Germany


Supervisor of bachelor's thesis: "Building and Validation of Low-Cost Breast Phantoms for Interventional Procedures"
B.Sc. in Biomedical Engineering, Universidad Carlos III de Madrid
 January 2018 - June 2018  Madrid, Spain


Course: Python for Beginners
Universidad Carlos III de Madrid
 December 2017  Madrid, Spain


Course: Image Processing and 3D Visualization
Master's degree in Medical Physics. UNED
 June 2016  Madrid, Spain


Course: Medical Instrumentation and Devices
B.Sc. in Biomedical Engineering, Universidad Carlos III de Madrid
 November 2015  Madrid, Spain


AWARDS


 **ISCAS Best Paper Award**
June 2019


 **Erasmus+ International Grant**
February 2019


 **UC3M Ph.D. Mobility Grant**
January 2019

 **ISCAS Student Travel Award**
June 2018


 **Hamlyn Symposium Travel Award**
June 2017

 **ISCAS Best Student Poster Award**
June 2016

 **UC3M M.Sc. Full Scholarship**
September 2015


 **UC3M B.Sc. Mobility Grant**
July 2014


CERTIFICATES

 **IELTS English Certificate [7.5]**
April 2016


 **First Certificate in English (FCE)**
June 2009


FURTHER TRAINING


 **Medical Imaging Summer School**
July 2018 - Favignana, Italy


 **Int. Summer School on Deep Learning**
July 2017 - Bilbao, Spain

 **Course: Introducing Robotics**
Queensland University of Technology
February 2017 - Brisbane, Australia

 **UCL Medical Image Computing Summer School (MedICSS)**
July 2016 - London, UK

 **Course: Ultrasound Imaging**
University of Twente
May 2016 - Twente, Netherlands

 **Course: 3D Bioprinting**
University of Wollongong
April 2016 - Wollongong, Australia

 **Course: Begin Robotics**
University of Reading
March 2016 - Reading, UK



OTHER EXPERIENCE

- Reviewer at International Journal of Computer Assisted Radiology and Surgery . July 2019.
- Reviewer at 22nd International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2019. October 13th-17th, 2019. Shenzhen, China.
- Sport Events Officer at The Medical Image Computing and Computer Assisted Intervention Society. Responsible for the organisation of sports related events at MICCAI 2019 conference. Shenzhen, China.



JOURNAL ARTICLES

- D. García-Mato, E. Marinetto, A. García, S. Martínez, M. Desco, J. Pascau. **Multicamera Optical Tracker Assessment for Computer Aided Surgery Applications**. IEEE Access, vol. 6, pp. 64359-64370, 2018. [doi: 10.1109/ACCESS.2018.2878323]
- R. Moreta-Martinez, D. García-Mato, M. García-Sevilla, R. Pérez-Mañanes, J. A. Calvo, J. Pascau. **Augmented reality in computer-assisted interventions based on patient-specific 3D printed reference**. Healthcare Technology Letters, pp. 1–5.
- M. García-Sevilla, J. De León-Luis, R. Moreta-Martínez, D. García-Mato, R. Pérez-Mañanes, J. A. Calvo-Haro, J. Pascau. **Performance Evaluation to Improve Training in Forceps-Assisted Delivery**. OR 2.0 Context-Aware Operating Theaters, Computer Assisted Robotic Endoscopy, Clinical Image-Based Procedures, and Skin Image Analysis, pp. 69-77



CONFERENCE PROCEEDINGS

- D. García-Mato, M. García-Sevilla, S. Ochandiano, C. Navarro-Cuellar, J. V. Darriba-Allés, R. García-Leal, J. Pascau. **Morphometric Analysis in Craniostynosis Reconstruction Surgery based on Structured Light Scanning**. 18th meeting of the International Society of Craniofacial Surgery (ISCFS) 2019. Paris, France. Poster presentation.
- S. Ochandiano, D. García-Mato, E. Bullesjos, J. V. Darriba-Allés, R. García-Leal, J. Pascau, J. I. Salmerón. **Intraoperative Navigation in Craniostynosis based on Virtual Surgical Planning and an "In-House" Technique**. 18th meeting of the International Society of Craniofacial Surgery (ISCFS) 2019. Paris, France. Oral presentation.
- D. García-Mato, M. García-Sevilla, S. Ochandiano, C. Navarro-Cuellar, J. V. Darriba-Allés, R. García-Leal, J. Pascau. **Structured Light Scanning for Morphometric Analysis in Craniostynosis Reconstruction Surgery**. Computer Assisted Radiology and Surgery (CARS) conference 2019, Rennes, France. Oral presentation. **ISCAS Best Paper Award**
- D. García-Mato, S. Ochandiano, S. Espías-Alonso, M. García-Sevilla, R. Moreta-Martinez, J. A. Calvo-Haro, R. Pérez-Mañanes, J. Pascau. **Non-invasive computer-assisted dental implant surgery based on optical tracking and 3D printing**. Computer Assisted Radiology and Surgery (CARS) conference 2019, Rennes, France. Poster presentation.
- M. García-Sevilla, D. García-Mato, J. Calvo-Haro, R. Pérez-Mañanes, J. Pascau. **Optimizing navigation with patient-specific 3D printed guides in pelvic tumor resection surgery**. Computer Assisted Radiology and Surgery (CARS) conference 2019, Rennes, France. Oral presentation.
- M. Concepción-Brito, R. Moreta-Martinez, J. Serrano, D. García-Mato, M. García-Sevilla, J. Pascau. **Segmentation of Organs at Risk in Head and Neck Radiation Therapy with 3D Convolutional Networks**. Computer Assisted Radiology and Surgery (CARS) conference 2019, Rennes, France. Oral presentation.
- E. Bullesjos, S. Ochandiano D. García-Mato, M. Tousidonis, G. Arenas, J. I. Salmerón. **Planificación Virtual y Navegación Intraoperatoria en el Tratamiento de la Craneosinostosis**. Congreso Nacional de Cirugía Oral y Maxilofacial, Sevilla, Spain. Oral presentation.
- S. Espías-Alonso, S. Ochandiano D. García-Mato, J. Pascau, C. Navarro-Cuellar J. I. Salmerón. **Empleo de Sistema de Realidad Aumentada en Craneosinostosis**. Congreso Nacional de Cirugía Oral y Maxilofacial, Sevilla, Spain. Oral presentation.
- R. Moreta-Martinez, D. García-Mato, M. García-Sevilla, R. Pérez-Mañanes, J. A. Calvo, J. Pascau. **AR in computer-assisted interventions based on patient-specific 3D printed reference**. Augmented Environments for Computer-Assisted Interventions Workshop, MICCAI 2018, Granada, Spain. Oral presentation.
- M. García-Sevilla, J. De León-Luis, R. Moreta-Martínez, D. García-Mato, R. Pérez-Mañanes, J. A. Calvo-Haro, J. Pascau. **Performance Evaluation to Improve Training in Forceps-Assisted Delivery**. OR 2.0 Context-Aware Operating Theaters Workshop, MICCAI 2018, Granada, Spain. Oral presentation.
- M. Tousidonis, D. García-Mato, G. Arenas, E. Bullesjos, J. Pascau, S. Ochandiano. **Orbital reconstruction workflow based on desktop 3D printing and open-source navigation system**. European Association for Cranio-Maxillo-Facial Surgery 2018, Munich, Germany. Poster presentation.
- G. Arenas, D. García-Mato, M. Tousidonis, P. Montes, J. Pascau, S. Ochandiano. **Open Source Navigation System and CAD-CAM Technology in Surgical Treatment of Craniostynosis**. European Association for Cranio-Maxillo-Facial Surgery 2018, Munich, Germany. Oral presentation.

- E. León-Román, P. Sanz-Ruiz, D. García-Mato, I. López-Torres, J. Pascau, J. Vaquero-Martín **Estudio comparativo experimental en rodillas de cadáveres entre la prótesis CCK y bisagra rotatoria**. Congreso Nacional de la Sociedad Española de Cirugía Ortopédica y Traumatología, Valladolid, Spain. Oral presentation.
- D. García-Mato, M. S. Holden, A. Lasso, A. Szulewski, J. Pascau, G. Fichtinger **3D Gaze Tracking for Skill Assessment in Ultrasound-Guided Needle Insertions**. Computer Assisted Radiology and Surgery (CARS) conference 2018, Berlin, Germany. Oral presentation.
- D. García-Mato, S. Ochandiano, M. Tousidonis, R. Moreta-Martínez, M. García-Sevilla, M. Desco, J. Pascau **Orbital Floor Reconstruction Workflow based on 3D Printing and Surgical Navigation**. Computer Assisted Radiology and Surgery (CARS) conference 2018, Berlin, Germany. Poster presentation.
- D. García-Mato, E. León-Román, M. García-Sevilla, P. Sanz-Ruiz, R. Pérez-Mañanes, J. A. Calvo, F. Forriol, M. Desco, J. Vaquero-Martín, J. Pascau **Knee Joint Goniometry using MARG low-cost sensors**. Computer Assisted Radiology and Surgery (CARS) conference 2018, Berlin, Germany. Poster presentation.
- D. García-Mato, A. Lasso, A. Szulewski, J. Pascau, G. Fichtinger. **3D Gaze Tracking based on Eye and Head Pose Tracking**. 10th Hamlyn Symposium on Medical Robotics 2017, London, United Kingdom. Oral + Poster Presentation.
- R. López-Velazco, D. García-Mato, G. Rodríguez-Lozano, M. García-Sevilla, E. Marinetto, D. García-Olmo, M. Desco, M. Ortega-López, J. Pascau. **Image Guidance for Sacral Neuromodulation**. Computer Assisted Radiology and Surgery (CARS) conference 2017, Barcelona, Spain. Oral Presentation.
- D. García-Mato, A. Lasso, A. Szulewski, J. Pascau, G. Fichtinger. **3D Gaze Tracking based on Eye and Head Pose Tracking**. Queen's Graduate Computing Society Conference 2017, Kingston, Canada. Oral Presentation.
- D. García-Mato, E. Marinetto, R. López, M. García-Sevilla, M. Desco, J. Pascau. **Cervical Range of Motion Measurement using MARG Low-Cost Sensors**. Interactive Medical Image Computing (IMIC) Workshop. MICCAI 2016, Athens, Greece. Oral Presentation.
- R. López-Velazco, D. García-Mato, G. Rodríguez-Lozano, M. García-Sevilla, E. Marinetto, D. García-Olmo, M. Desco, M. Ortega-López, J. Pascau. **Navegación quirúrgica de la Neuromodulación de las Raíces Sacras**. Spanish Society of Biomedical Engineering Annual Conference 2016, Valencia, Spain. Oral Presentation.
- V. García-Vázquez, G. Rodríguez-Lozano, R. Pérez-Mañanes, J. A. Calvo, D. García-Mato, M. Cuervo-Dehesa, M. Desco, J. Pascau, J. Vaquero. **Desktop 3D Printing in medicine to improve surgical navigation in acral tumors**. Computer Assisted Radiology and Surgery (CARS) conference 2016, Heidelberg, Germany. Poster Presentation. **ISCAS Best Poster Award**
- D. García-Mato, E. Marinetto, L. Sanz-Díaz, M. Desco, J. Pascau. **Calibration developments for multicamera optical tracking systems**. Spanish Society of Biomedical Engineering Annual Conference 2015, Madrid, Spain. Poster Presentation.