

Brayan Impatá

RESEARCHER & ENGINEER

Valencia, Spain

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Work Experience

Amazon

APPLIED SCIENTIST

Madrid, Spain

Oct. 2020 - Present

- Work on fixing item data quality issues in the catalogue, so customers do not experience defects during shopping sessions.
- Research on multimodal data (images and text). Work with models such as CNN, ViT, CLIP, InstructBLIP in PyTorch and AWS SageMaker.
- Build Python packages that leverage my models. These packages are core parts of services running 24/7 in production.
- My contributions have improved the metadata quality of millions of products in 20 marketplaces worldwide.

University of Alicante

ROBOTICS RESEARCH ENGINEER

Alicante, Spain

Apr. 2017 - Sep. 2020

- Researched on robotic grasping, grasp assessment and control based on computer vision and tactile perception with multi-fingered hands.
- Delivered novel solutions that tackled robotic manipulation tasks using deep learning models like CNNs, LSTMs, GCNs and GANs.
- Published new robotic datasets and open-source algorithms in C++ ([GeoGrasp](#)) to work on real time with robots using ROS, PCL and OpenCV.
- Proposed a research roadmap for the laboratory related to robotic manipulation which resulted in 2 MSc thesis apart from my PhD.

Amazon Robotics AI

APPLIED SCIENCE INTERN

Berlin, Germany

Mar. 2020 - Aug. 2020

- Carried out research on visual perception for detecting object manipulation defects in logistics.
- Built production library with image-based (ResNet) and video-based (i3d) learning models in PyTorch to recognise defects on real time.
- Presented the idea to senior managers and delivered a working solution to mitigate an economically impactful defect caused by manipulators.

Northeastern University

VISITING SCHOLAR

Boston, United States

May. 2018 - Sep. 2018

- Designed and implemented a robotic mobile manipulation system, providing it with autonomy at grasping, navigation and task planning.
- The system achieved 80.8% grasping rate, navigated without issues 96.1% of the trials, and yielded 85.7% overall task success rate.

Critical Future LTD

COMPUTER VISION CONSULTANT

London, England

Mar. 2018 - May. 2018

- Led the technical development of a ML-based solution for a health-care company to detect skin cancer from pictures of skin moles.
- Collaborated with medical experts on the design of the system and its evaluation protocol.
- Implemented an ensemble of models, including CNNs, Gradient Boosting Trees and SVM, which met our customer's requirements.

Teralco

BUSINESS INTELLIGENCE ENGINEER

El Altet, Spain

Jul. 2015 - Dec. 2016

- Automated ETL process to load AWS Redshift database, reducing processing times from 2 days of human work to 6 computing hours.
- Collaborated with marketing staff in data analysis projects, like client segmentation, proposing solutions from a machine learning perspective.

Education

University of Alicante

PHD IN ROBOTICS AND MACHINE LEARNING

Alicante, Spain

Oct. 2016 - Sep. 2020

- Thesis ([Available here](#)): "Robotic Manipulation based on Visual and Tactile Perception" - Graded as PhD *cum laude*.
- Proposed fast solutions that scale for robotic grasping as well as innovative methodologies for processing visual and tactile perception.
- Applied deep learning and computer vision techniques to 2D images, 3D point clouds and tactile data.

University of Alicante

M.S. IN COMPUTER ENGINEERING

Alicante, Spain

Oct. 2015 - Feb. 2017

- Thesis: "Using Open Research Data for Building Recommendation Systems" - Graded with honours.
- Built an [open-source tool](#) for downloading, processing and building machine learning models from open research data in TensorFlow.
- Specialised in applied artificial intelligence for R&D in industries.

University of Alicante

B.S. IN COMPUTER ENGINEERING

Alicante, Spain

Sep. 2011 - Jul. 2015

- Thesis: "Application of Swarm Intelligence for Improving a Clinical Decision Support System" - Graded with honours.
- Built a [rogue-like video game for Amstrad CPC](#) in which I implemented enemy IAs and the sound effects.
- Specialised on data mining, computer vision, robotics and artificial intelligence.

Selected Publications

Transfer Learning for Fine-grained Classification Using Semi-supervised Learning and Visual Transformers

LAGUNAS, MANUEL AND **IMPATA, BRAYAN** AND MARTINEZ, VICTOR AND FERNANDEZ, VIRGINIA AND GEORGAKIS, CHRISTOS AND BRAUN, SOFIA AND BERTRAND, FELIPE (2023)

Conference on Computer Vision and Pattern Recognition (2023). Workshop on LatinX in CV. arXiv:2305.10018

Generation of tactile data from 3D vision and target robotic grasps

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND MEZOUAR, YUCEF AND TORRES, FERNANDO (2020)

IEEE Transactions on Haptics 14(1)

Tactile-driven grasp stability and slip prediction

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND TORRES, FERNANDO (2019)

Robotics 8(4)

Tactilegcn: A graph convolutional network for predicting grasp stability with tactile sensors

GARCIA-GARCIA, ALBERTO AND **ZAPATA-IMPATA, BRAYAN S** AND ORTS-ESCOLANO, SERGIO AND GIL, PABLO AND

GARCIA-RODRIGUEZ, JOSE (2019)

International Joint Conference on Neural Networks (IJCNN 2019)

Tactile Graphs for Grasp Stability Prediction

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND GARCIA-GARCIA, ALBERTO AND ORTS-ESCOLANO, SERGIO AND

GARCIA-RODRIGUEZ, JOSE (2019)

International Conference on Learning Representations (ICLR 2019). Workshop on Representation Learning on Graphs and Manifolds

Learning spatio temporal tactile features with a ConvLSTM for the direction of slip detection

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND TORRES, FERNANDO (2019)

Sensors 19(3)

Fast geometry-based computation of grasping points on three-dimensional point clouds

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND POMARES, JORGE AND TORRES, FERNANDO (2019)

International Journal of Advanced Robotic Systems 16(1)

Autotrans: an autonomous open world transportation system

ZAPATA-IMPATA, BRAYAN S AND SHAH, VIKRANT AND SINGH, HANUMANT AND PLATT, ROBERT (2019)

International Conference on Robotics and Automation (ICRA 2019). Workshop on High Accuracy Mobile Manipulation in Challenging Environments. arXiv:1810.03400

A vision-driven collaborative robotic grasping system tele-operated by surface electromyography

UBEDA, ANDRES AND **ZAPATA-IMPATA, BRAYAN S** AND PUENTE, SANTIAGO T AND GIL, PABLO AND CANDELAS, FRANCISCO AND

TORRES, FERNANDO (2018)

Sensors 18(7)

Non-matrix tactile sensors: How can be exploited their local connectivity for predicting grasp stability?

ZAPATA-IMPATA, BRAYAN S AND GIL, PABLO AND TORRES, FERNANDO (2018)

International Conference on Intelligent Robot and Systems (IROS 2018). Workshop on RoboTac: New Progress in Tactile Perception and Learning in Robotics. arXiv:1809.05551

Using geometry to detect grasping points on 3D unknown point cloud

ZAPATA-IMPATA, BRAYAN S AND MATEO AGULLO, CARLOS AND GIL, PABLO AND POMARES, JORGE (2017)

International Conference on Informatics in Control, Automation and Robotics (ICINCO 2017). Best Paper Award.