Brais Martinez

Professional Experience

10/20 - Now Tech Lead/Principal Researcher,

Focus on long-term research that acts as enabler for commercialization. KPI: commercializations, patents, and top-tier publications. **Responsibilities:**

- Technical leadership, focusing on Efficient Vision & Language (Visual Perception, visual LLMs, and Image Generation).
- Management of 4-6 persons.
- Steering strategy and collaborating within wider group (16 HC).

4/19 - 9/20 Senior Researcher,

Worked on Video analysis and Binary Quantization as an individual contributor and research lead.

6/16 - 3/19 Research Scientist,

Part of the Amazon Go team, my work was to develop, validate and implement the algorithms behind Amazon's Just Walk Out technology, the core technology behind Amazon's brick-and-mortar checkout-free grocery shopping experience.

6/14 - 4/16 Research Fellow,

10/10 - 5/14 Research Associate,

University of Nottingham. Imperial College London.

Samsung AI Center - Cambridge.

Education

- 06 10 **Ph.D. in Computer Science**,
- 05 06 MSc. in Computer Vision,
- 98 03 B.S. in Mathematics,

Autonomous University of Barcelona, Spain. Autonomous University of Barcelona, Spain. University of Santiago de Compostela, Spain.

• Projects:

- 2025 Multi-modal RAG.
- 2025 On-device diffusion-based inpainting.
- 2025 On-device Image Gallery VQA.
- 2024 Natural Language Gallery Search (S25 commercialization). Adds support for Natural Language queries when searching on the phone gallery. Uses a contrastively-trained Vision&Language model.
 - Presented at the Galaxy Unpacked 2025 event YouTube link
 - Marques Brownlee: "... finding an old photo by describing it is even more cool, and it actually works!" YouTube link,

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Amazon - Seattle.

Samsung AI Center - Cambridge, UK.

- 2024 Gallery Photo Upscaler (S25 commercialization). Enables editing a gallery image by zooming in, and then saving at the original resolution. The upsampling relies on diffusion SR running on device ($4K \times 3K$ under 3.5 sec on S24).
- 2023 **On device LLM.** Leverage distillation, on-device runtime optimizations, and on-device quantization (see EMNLP'24 MobileQuant).

Selected Publications (Full list: Google Scholar)

Image Generation:

- CVPR'25 I. Hadji, M. Noroozi, V. Escorcia, A. Zaganidis, B. Martinez, G.
 Tzimiropoulos, "Edge-SD-SR: Low Latency and Parameter Efficient On-device
 Super-Resolution with Stable Diffusion via Bidirectional Conditioning", *IEEE Conference on Computer Vision and Pattern Recognition*, 2025.
- CVPR'25 H. Yang, A. Bulat, I. Hadji, H.X. Pham, X. Zhu, G. Tzimiropoulos, B.
 Martinez, "FAM Diffusion: Frequency and Attention Modulation for High-Resolution Image Generation with Stable Diffusion", *IEEE Conference* on Computer Vision and Pattern Recognition, 2025.
- ECCV'24 M. Noroozi, I. Hadji, B. Martinez, A. Bulat, G. Tzimiropoulos, "You Only Need One Step: Fast Super-Resolution with Stable Diffusion via Scale Distillation", *European Conference on Computer Vision*, 2024.

vLLMs / LLMs:

- CVPR'25 Y. Ouali, A. Bulat, A. Xenos, A. Zaganidis, I. Maniadis Metaxas, B. Martinez,
 G. Tzimiropoulos, "VladVA: Discriminative Fine-tuning of LVLMs", *IEEE* Conference on Computer Vision and Pattern Recognition, 2025.
- NeurIPS'24 X. Xu, M. Kim, R. Lee, T. Hospedales, B. Martinez, "A Bayesian Approach to Data Point Selection", *Neural Information Processing Systems*, 2024.
 - ECCV'24 Y. Ouali, A. Bulat, B. Martinez, G. Tzimiropoulos, "CLIP-DPO: Vision-Language Models as a Source of Preference for Improved Vision-LLMs", *European Conference on Computer Vision*, 2024.
 - EACL'24 H.X. Pham, I. Hadji, X. Xu, Z. Degutyte, J. Rainey, E. Kazakos, A. Fazly, G. Tzimiropoulos, B. Martinez, "Graph Guided Question Answer Generation for Procedural Question-Answering". *European Chapter of the Association for Computational Linguistics*, 2024 (Oral).

Visual Perception:

- ECCV'24 Y. Ouali, A. Bulat, B. Martinez, G. Tzimiropoulos, "CLIP-DPO: Vision-Language Models as a Source of Preference for Improved Vision-LLMs", *European Conference on Computer Vision*, 2024.
- EMNLP'24 A. Bulat, Y. Ouali, R. Guerrero, B. Martinez, G. Tzimiropoulos, "Efficient Vision-Language pre-training via domain-specific learning for human activities", *Empirical Methods in Natural Language Processing*, 2024.

- ICCV'23 Y. Ouali, A. Bulat, B. Martinez, G. Tzimiropoulos, "Black Box Few-Shot Adaptation for Vision-Language models". *International Conference on Computer Vision*, 2023.
- ICCV'23 A. Bulat, E. Lozano, B. Martinez, G. Tzimiropoulos, "ReGen: A good Generative zero-shot video classifier should be Rewarded". *International Conference on Computer Vision*, 2023.
- ICCV'23 M. Derakhshani, E. Sanchez, A. Bulat, VG. Turrisi, C. Snoek, G. Tzimiropoulos, B. Martinez, "Bayesian Prompt Learning for Image-Language Model Generalization". *International Conference on Computer Vision*, 2023.
- ECCV'22 N. Dvornik, I. Hadji, H. Pham, D. Bhatt, B. Martinez, A. Fazly, A. Jepson,
 "Graph2Vid: Flow graph to Video Grounding for Weakly-supervised Multi-Step Localization". *European Conference on Computer Vision (Oral)*, 2022.
- Efficiency (Architectures, Quantization, Distillation):
 - EMNLP'24 F. Tan, R. Lee, L. Dudziak, S. X. Hu, S. Bhattacharya, T. Hospedales, G. Tzimiropoulos, B. Martinez, "MobileQuant: Mobile-friendly Quantization for On-device Language Models", *Empirical Methods in Natural Language Processing*, 2024.
 - IJCV'24 J. Yang, X. Zhu, A. Bulat, B. Martinez, G. Tzimiropoulos, "Knowledge Distillation Meets Open-Set Semi-supervised Learning", *International Journal* of Computer Vision, 2024.
 - ECCV'22 J. Pan, A. Bulat, F. Tan, X. Zhu, L. Dudziak, H. Li, G. Tzimiropoulos,
 B. Martinez, "EdgeViTs: Competing Light-weight CNNs on Mobile Devices with Vision Transformers". *European Conference on Computer Vision*, 2022.
 - ICLR'21 J. Yang, B. Martinez, A. Bulat, G. Tzimiropoulos "Knowledge distillation via softmax regression representation learning", *International Conference on Learning Representations*, 2021.
 - ICLR'21 A. Bulat, **B. Martinez**, G. Tzimiropoulos, "High-Capacity Expert Binary Networks", *International Conference on Learning Representations*, 2021.
 - NeurIPS'21 A. Bulat, J. Perez-Rua, S. Sudhakaran, B. Martinez, G. Tzimiropoulos, "Space-time Mixing Attention for Video Transformer", *Neural Information Processing Systems*, 2021.
 - ICLR'20 B. Martinez, J. Yang, A. Bulat, G. Tzimiropoulos, "Training binary neural networks with real-to-binary convolutions", *International Conference on Learning Representations*, 2020.

Service

- Area Chair: ICCV'21, WACV'22.
 - Reviewer: CVPR, ICCV, ECCV, NeurIPS, ICML, ICLR, TPAMI, etc.
- Outstanding CVPR'25,'21,'20, AAAI'20, NeurIPS'20, ICLR'22. Reviewer: