

Teresa Canas-Bajo

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Education

University of California, Berkeley

PHD, VISION SCIENCE (GPA: 4.00/4.00)

[Berkeley, CA](#)

[Aug 2017 - Present](#)

University of Edinburgh

MASTERS OF SCIENCE, RESEARCH IN EXPERIMENTAL PSYCHOLOGY

[Edinburgh, UK](#)

[Aug 2015 - Aug 2016](#)

Universidad Autonoma de Madrid

BA, PSYCHOLOGY

[Madrid, Spain](#)

[Aug 2011 - Dec 2015](#)

Experience

Berkeley Deep Drive Project Lead

UNIVERSITY OF CALIFORNIA, BERKELEY

[Berkeley, CA](#)

[Aug 2019 - Present](#)

Project: Investigating driver's attention while monitoring an autonomous vehicle

- This project investigates whether drivers can monitor efficiently the actions of an automated car. To this purpose, we analyze drivers gaze and attention maps in a driving simulator in different degrees of car automation, from fully manual to fully autonomous vehicle.
- Manage a team of four people (two research assistants, one human factor expert and an engineer) and coordinate tasks that involve the development of driving simulator scenarios and the development of code to analysis driving behavior and eye movements.
- Built a [Python API](#) to record, analyze, classify and describe drivers' eye movements while driving a manual, semi-autonomous or fully autonomous vehicle using Pupil Labs mobile eye-tracker. This code includes processing and segmentation of a egocentric-viewpoint video feed that captures drivers perception of the driving environment. Open-sourced on Github.
- Applied a [Adaptive Whitening Saliency model](#) and top-down driving models (such as the vanishing point model) to predict areas of the driving simulation that will most likely attract the driver's attention. In the near future, we will use these metrics to detect driver attention lapses, as a part of a driver-monitoring system.
- Applied an [object-detection pre-trained model](#) from TensorFlowHub specialized for multiple object localization on single images to detect and classify driving-relevant (traffic signs, cars, pedestrians) and driving-irrelevant (billboards, trees, off-road pedestrians) in drivers' egocentric viewpoint video. The purpose of this object-detection approach is to be able to determine whether drivers' eye-movements land on each of these objects and areas.
- Built a simulated city using Prescan, Simulink and Matlab for a Force Dynamics driving simulator. Our code allows simultaneous collection of driver behavior.

Vision Science Graduate Student Researcher

UNIVERSITY OF CALIFORNIA, BERKELEY

[Berkeley, CA](#)

[Aug 2017 - Present](#)

Thesis Project: Individual Differences in Holistic Processing of Faces

- The aim of my thesis project is to use a combination of behavioral and eye-tracking methods to understand how experience may shape the way each person perceives the faces around them.
- Used statistical analysis software in Python, R and Matlab to program experiments and statistical analysis for behavioral data. Used visualization tools such as Matplotlib and Seaborn to help interpret the data.
- Collected human data and developed and tested regression and analysis of variance models to predict face perception abilities to show how face perception depends on the unique experience of each person. Applied bootstrap and permutation methods to test the significance of resulting effects.
- Applied image-similarity measures such as normalized pixel-wise crosscorrelation, structural similarity index and clustering to compute similarity between faces human perceive in the world. Used feature map extraction and gram-matrix style transfer strategies from the Convolutional Neural Networks field to develop a face-space for higher-level face similarity.

Skills

Programming Languages Python, MATLAB, SQL, R

Frameworks and Tools OpenCV, Git, NumPy, Pandas, scikit-learn, Bash, Tensorflow, Unix Systems

Awards

2019 **Campus Outstanding Graduate Student Instructor Award**, University of California

[UC Berkeley](#)

2017 **Fulbright scholarship for doctorate programs**, U.S - Spain Fulbright Commission

[UC Berkeley](#)

2015 **"La Caixa" Fellowship for Postgraduate Studies Abroad**, Fundacion La Caixa

[Edinburgh, UK](#)

2015 **Undergraduate Thesis Distinction**, Facultad de Psicologia, Universidad Autonoma de Madrid

[Madrid, Spain](#)

Teaching

Spring 2018-2020 **Anatomy and Physiology of the Eye and the Visual System**, VS206, University of California, Berkeley

Publications

- Xia, Y., Kim, J., Canny, J., Zipser k., **Canas-Bajo, T.** & Whitney, D. (2020) Periphery-fovea multi-resolution driving model guided by human attention. *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2020, pp. 1767-1775.
- **Canas-Bajo, T.**, & Whitney, D. (2020). Stimulus-specific individual differences in holistic perception of Mooney faces. *Frontiers in Psychology* (in print)
- Wang, P., Motamedi, S., **Canas-Bajo, T.**, Zhou, X., Zhang, T., Whitney, D. & Chan, C. (2019) Safety Implications of Automated Vehicles Providing External Communication to Pedestrians. *Transportation Research Board Annual Meeting*.
- Canas-Bajo, J., **Canas-Bajo, T.**, Berki, E., Valtanen, J., & Saariluoma, P. (2019). Designing a New Method of Studying Feature-Length Films, *Projections*, 13(3), 53-78.
- Canas-Bajo, J., **Canas-Bajo, T.**, Berki, E., Valtanen, J. P., & Saariluoma, P. (2019). Emotional experiences of films: Are they universal or culturally mediated?. *Participations. Journal of Audience Reception Studies*, 16(2).