# Robbe **Goris**

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## Publications

### Journal Articles

1. Goris, R. L. T., Coen-Cagli, R., Miller, K. D., Priebe, N. J., & Lengyel, M. (2024). Response sub-additivity and variability quenching in visual cortex. *Nature Reviews Neuroscience*. https://doi.org/10.1038/s41583-024-00795-0
2. Charlton, J. A., Młynarski, W. F., Bai, Y. H., Hermundstad, A. M., & Goris, R. L. T. (2023). Environmental dynamics shape perceptual decision bias. *PLOS Computational Biology*, *19*(6), e1011104. https://doi.org/10.1371/journal.pcbi.1011104
3. Boundy-Singer, Z. M., Ziemba, C. M., & Goris, R. L. T. (2022). Confidence reflects a noisy decision reliability estimate. *Nature Human Behaviour*, *7*(1), 142–154. https://doi.org/10.1038/s41562-022-01464-x
4. Hénaff, O. J., Bai, Y., Charlton, J. A., Nauhaus, I., Simoncelli, E. P., & Goris, R. L. T. (2021). Primary visual cortex straightens natural video trajectories. *Nature Communications*, *12*(1). https://doi.org/10.1038/s41467-021-25939-z

### Preprints

1. Ziemba, C. M., Goris, R. L. T., Stine, G. M., Perez, R. K., Simoncelli, E. P., & Movshon, J. A. (2024). *Neuronal and behavioral responses to naturalistic texture images in macaque monkeys*. https://doi.org/10.1101/2024.02.22.581645
2. Charlton, J. A., & Goris, R. L. T. (2022). *Abstract deliberation by visuomotor neurons in prefrontal cortex*. https://doi.org/10.1101/2022.12.06.519340
3. Charlton, J. A., Młynarski, W. F., Bai, Y. H., Hermundstad, A. M., & Goris, R. L. T. (2022). *Perceptual decisions exhibit hallmarks of dynamic bayesian inference*. https://doi.org/10.1101/2022.05.23.493109
4. Boundy-Singer, Z. M., Ziemba, C. M., & Goris, R. L. T. (2021). *Confidence as a noisy decision reliability estimate*. https://doi.org/10.1101/2021.12.17.473249

### Books

### Book Chapters

## Professional Presentations

**Abstract deliberation by visuomotor neurons in prefrontal cortex**

NETI, UT Austin *2023*

**How V1 population activity informs visual uncertainty estimates**

SfN 2023 – minisymposium *2023*

**Perception in the face of uncertainty: Neuronal and computational mechanisms of visual confidence**

Uncertainty workshop, Giessen, Germany *2023*

**Population activity in sensory cortex informs confidence in a perceptual decision**

VSS 2023 *2023*

**Perception in the face of uncertainty and change**

Vision journal club/Flatiron CCN talk (New York) *2022*

**Perception in the face of uncertainty and change**

University of Wyoming, Sensory Biology Center *2022*

**Perception in the face of uncertainty and change**

University of Washington Computational Neuroscience Center *2022*

**Quantifying Perceptual Introspection**

Perceptual metacognition meeting 2022, Amsterdam *2022*

**Quantifying perceptual introspection**

VSS 2022 *2022*

**Computation, Representation, and Prediction in the primate visual system**

Virtual talk in Franco Pestilli's lab meeting, UT Austin *2021*

**Uncertainty and introspection in the primate visual system**

Virtual colloquium in Felix Wichmann's lab meeting, Eberhard Karl's University of Tuebingen *2021*

**Uncertainty coding in macaque visual cortex**

Computational and Theoretical Neuroscience Seminar, UT Austin *2021*

## Conference Abstracts

**Abstract deliberation by visuomotor neurons in prefrontal cortex**

Cosyne 2023 *2023*

**Decoding momentary gain variability from neuronal populations**

Cosyne 2023 *2023*

**Dynamics of population activity in macaque prefrontal cortex predict impact of prior expectation during perceptual decision-making**

SfN 2023 *2023*

**Population activity in sensory cortex informs confidence in a perceptual decision**

Cosyne 2023 *2023*

**Decoding momentary gain variability from neuronal populations**

SfN 2022 *2022*

**Macaque prefrontal cortex reflects abstract, not embodied, decision-related activity before representing motor plans**

SfN 2022 *2022*

**Relating V1 population activity to perceptual orientation uncertainty**

SfN 2022 *2022*

**Representation of sensory uncertainty by neuronal populations in macaque primary visual cortex**

COSYNE 2022 *2022*

**Direct representation of a Bayesian posterior in the prearcuate gyrus**

SfN 2021 *2021*

**Isolating metacognitive sensitivity with a process model for confidence**

SfN 2021 *2021*

**Representation of Uncertainty by Macaque V1 Populations**

SfN 2021 *2021*

## Honors

## Funding

**CAREER: Probabilistic inference in the primate visual system**

*Directorate for Biological Sciences, 2146369*

Funding: $899,998 *2022 - 2027*

**Uncertainty, inference, and introspection in the primate visual system**

*National Eye Institute, R01EY032999*

Funding: $398,504 *2022 - 2026*

**Representation of Uncertainty in Macaque Visual Cortex** *Whitehall Foundation,*

Funding: $225,000 *2019 - 2024*

## Service

**SURE program, special track for Computational Visual Neuroscience** *Austin, US*

Funded and supervised three summer research internship students *NA - present*

**Department Colloquium Series** *Austin, US*

Organizer *2023 - present*

**ARC Faculty Advisory Committee** *Austin, US*

Committee member *2023 - present*

**Horizon Europe MSCA Doctoral Networks project** *Amsterdam, NL*

External Advisory Board member *2023 - present*

**NIH F02B study section (Fellowships: Sensory and Motor...)** *Washington DC, US*

Ad hoc member *2023 - present*

**NIH study section (BRAIN Initiative R01/R34)** *Washington DC, US*

Ad hoc member *2022 - present*

**National Science Foundation** *Austin, US*

Reviewer for CAREER proposals *2022 - present*

**Swiss National Science Foundation** *Austin, US*

Grant reviewer *2022 - present*

**UT Austin's IACUC** *Austin, US*

Alternate member for Nicholas Priebe *2019 - 2024*

**Reviewing** *Austin, US*

Cell Reports, Cerebral Cortex, eLife, eNeuro, Journal of Experimental Psychology General, Journal of Neurophysiology, Journal of Neuroscience, Journal of the Royal Society Interface, Journal of Vision, Nature Communications, Nature Machine Intelligence, Nature Neuroscience, Neuron, PLoS Biology, PLoS Computational Biology, PNAS, Science *2019 - 2024*

**NIH study section** *Washington DC, US*

Reviewer – Neuroscience of Basic Visual Processes *2022 - 2022*

**NIH study section** *Washington DC, US*

Reviewer – Fellowships: Sensory and Motor Neurosciences, Cognition and Perception *2022 - 2022*

## Mentoring and Teaching

### Mentoring

**Akash G.P. Raj**

PhD supervisor *2023 - 2024*

**Jiaming Xu**

PhD co-supervisor *2023 - 2024*

**Corey Ziemba**

Post-doctoral advisor *2018 - 2024*

**Zoe Boundy-Singer**

PhD supervisor *2018 - 2024*

**Jens-Oliver Muthmann**

Postdoctoral advisor *2022 - 2023*

**Gabriella Reyes-Coello**

Reader of Master's thesis *2022 - 2022*

**Julie Charlton**

PhD Supervisor *2017 - 2022*

## Teaching

**PSY 323 – Perception (Spring semester)**

Instructor *2024 - 2024*

**PSY 382V/NEU 382V (Neural and computational basis of vision)**

Instructor *2024 - 2024*

**PSY 323 – Perception (Spring semester)**

Instructor *2023 - 2023*

**PSY 323 – Perception (Fall semester)**

Instructor *2023 - 2023*

**PSY 194Q – Ethics and Professional Development (Spring semester)**

Instructor *2023 - 2023*

**PSY 323 – Perception (Spring semester)**

Instructor *2022 - 2022*

**PSY 194Q – Ethics and Professional Development (Spring semester)**

Instructor *2022 - 2022*

**PSY 323 – Perception (Fall semester)**

Instructor *2022 - 2022*

**PSY 194Q – Ethics and Professional Development (Spring semester)**

Instructor *2021 - 2021*