

## Publications

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### JOURNAL ARTICLES

1. 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>
2. 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>
3. Murphy, A. J., Shaw, L., Hasse, J. M., Goris, R. L. T., & Briggs, F. (2020). Optogenetic activation of corticogeniculate feedback stabilizes response gain and increases information coding in LGN neurons. *Journal of Computational Neuroscience*, 49(3), 259–271. <https://doi.org/10.1007/s10827-020-00754-5>
4. Hénaff, O. J., Boundy-Singer, Z. M., Meding, K., Ziemba, C. M., & Goris, R. L. T. (2020). Representation of visual uncertainty through neural gain variability. *Nature Communications*, 11(1). <https://doi.org/10.1038/s41467-020-15533-0>

### PREPRINTS

1. 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>
2. 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>
3. 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

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### 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

### Exploiting known unknowns: How the brain manages unreliable sensory information

BRAIN, BEHAVIOR, AND EVOLUTION SEMINAR, UT AUSTIN

2020

## Finding meta-noise

CENTER FOR PERCEPTUAL SYSTEMS SEMINAR, UT AUSTIN

2020

## Representation of visual uncertainty through neural gain variability

VIRTUAL TALK IN ALEXANDRE POUGET'S LAB MEETING, UNIVERSITY OF GENEVA

2020

## Representation of visual uncertainty through neural gain variability

VIRTUAL TALK IN RALF HAEFNER'S LAB MEETING, UNIVERSITY OF ROCHESTER

2020

## Uncertainty in the primate visual system

COSYNE 2020 WORKSHOPS

2020

## Conference Abstracts

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### 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

### Hierarchical inference guides perceptual decision-making in a dynamic environment

COSYNE 2020

2020

### Perceptual straightening of natural videos arises from a cascaded computation

COSYNE 2020

2020

### Representing visual uncertainty through neural gain variability

COSYNE 2020

2020

## Honors

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## Funding

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

FUNDING: \$899,998

Directorate for Biological Sciences,  
2146369

2022 - 2027

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

FUNDING: \$398,504

National Eye Institute, R01EY032999

2022 - 2026

### Representation of Uncertainty in Macaque Visual Cortex

FUNDING: \$225,000

Whitehall Foundation,

2019 - 2024

# Service

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## Reviewing

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

Austin, US

2019 - 2023

## UT Austin's IACUC

ALTERNATE MEMBER FOR NICHOLAS PRIEBE

Austin, US

2019 - 2023

## NIH study section

REVIEWER – NEUROSCIENCE OF BASIC VISUAL PROCESSES

Washington DC, US

2022 - 2022

## NIH study section

REVIEWER – FELLOWSHIPS: SENSORY AND MOTOR NEUROSCIENCES, COGNITION AND PERCEPTION

Washington DC, US

2022 - 2022

# Mentoring and Teaching

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## MENTORING

### Jens-Oliver Muthmann

POSTDOCTORAL ADVISOR

2022 - 2023

### Corey Ziemba

POST-DOCTORAL ADVISOR

2018 - 2023

### Zoe Boundy-Singer

PHD SUPERVISOR

2018 - 2023

### Gabriella Reyes-Coello

READER OF MASTER'S THESIS

2022 - 2022

### Julie Charlton

PHD SUPERVISOR

2017 - 2022

### Yoon Bai

PHD SUPERVISOR

2017 - 2020

## TEACHING

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

INSTRUCTOR

2023 - 2023

### PSY 323 – Perception (Spring semester)

INSTRUCTOR

2023 - 2023

### PSY 323 – Perception (Fall semester)

INSTRUCTOR

2022 - 2022

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

INSTRUCTOR

2022 - 2022

### PSY 323 – Perception (Spring semester)

INSTRUCTOR

2022 - 2022

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

INSTRUCTOR

2021 - 2021

### PSY 323 – Perception (Fall semester)

INSTRUCTOR

2020 - 2020

