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RPPR Final Report
as of 24-Jun-2021

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Report Date: 31-Jul-2020

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Final Report for Period Beginning 01-May-2019 and Ending 30-Apr-2020

Title: Conference on the connection of brain and mind

Begin Performance Period: 01-May-2019

End Performance Period: 30-Apr-2020

Report Term: 0-Other

Submitted By: Richard Shiffirin

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STEM Degrees:

STEM Participants:

Major Goals: The grant supported travel by students to the National Academy of Sciences Sackler Colloquium titled "Brain Produces Mind by Modeling", and held May 1-3, 2019 at the Beckman Center in Irvine CA. The goals for the students were hearing state of the art research presented by the 18 world-class speakers, interacting with those speakers at all breaks, breakfasts, lunches and dinners, interacting with speakers through short talks advertizing their posters, and interacting with speakers during presentation of those posters. Great care was taken to insure that members of under-represented groups were given travel awards, and hence were able to participate.

Most of the 56 students had their travel funded by a grant from the National Science Foundation, and the ARO grant was used to fund four students that the NSF grant could not cover. All of these students reported a truly excellent experience and greatly appreciated the chance to learn and to interact with the world leading scientists who presented at the colloquium.

Accomplishments: The grant supported travel by students to the National Academy of Sciences Sackler Colloquium titled "Brain Produces Mind by Modeling", and held May 1-3, 2019 at the Beckman Center in Irvine CA. The goals for the students were hearing state of the art research presented by the 18 world-class speakers, interacting with those speakers at all breaks, breakfasts, lunches and dinners, interacting with speakers through short talks advertizing their posters, and interacting with speakers during presentation of those posters. Great care was taken to insure that members of under-represented groups were given travel awards, and hence were able to participate.

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The colloquium itself was a great success, and was broadcast at the time it took place (for those unable to attend in person). The output of the colloquium is a special issue of PNAS that is almost ready for publication, presenting 16 reviewed and edited papers submitted by speakers at the Colloquium. This output can be viewed as 'accomplishments' and is described in 'Dissemination'.

RPPR Final Report as of 24-Jun-2021

Training Opportunities: The grant supported travel by students to the National Academy of Sciences Sackler Colloquium titled "Brain Produces Mind by Modeling", and held May 1-3, 2019 at the Beckman Center in Irvine CA. The goals for the students were hearing state of the art research presented by the 18 world-class speakers, interacting with those speakers at all breaks, breakfasts, lunches and dinners, interacting with speakers through short talks advertising their posters, and interacting with speakers during presentation of those posters. Great care was taken to insure that members of under-represented groups were given travel awards, and hence were able to participate.

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Results Dissemination: Many of the students attending gave talks advertising their research relevant for the Colloquium and then gave posters attended by the speakers. Some of these student projects have been published and others are in various stages of preparation.

The output of the colloquium itself are papers submitted by 16 of the 18 speakers, reviewed and edited by the co-organizers under my chief editorship, and to be published shortly in a special colloquium issue of the Proceedings of the National Academy of Sciences (PNAS). These will be generally available to the public, in the same manner as all papers published in PNAS.

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

PARTICIPANTS:

Participant Type: Graduate Student (research assistant)

Participant: Maverick E Smith

Person Months Worked: 1.00

Project Contribution:

National Academy Member: N

Funding Support:

Participant Type: Graduate Student (research assistant)

Participant: Ty (Tim) Tang

Person Months Worked: 1.00

Project Contribution:

National Academy Member: N

Funding Support:

Participant Type: Graduate Student (research assistant)

Participant: Anna Mini Jos

Person Months Worked: 1.00

Project Contribution:

National Academy Member: N

Funding Support:

Participant Type: Graduate Student (research assistant)

Participant: Sara Schroer

Person Months Worked: 1.00

Funding Support:

RPPR Final Report
as of 24-Jun-2021

Project Contribution:
National Academy Member: N

International Collaboration:

CAN

Partners

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I certify that the information in the report is complete and accurate:

Signature:

Signature Date:

In the final report section labeled 'Participants' are listed the four graduate students whose travel to the colloquium below was funded by the Army Research Office. The institutions of these students are as follows: Smith—Kansas State; Tang—Arizona State; Jos—McGill (Canada); Schroer—Indiana. There were 52 other student attendees whose travel was subsidized by an NSF Grant, and are not listed.

The speakers at the Colloquium are given below. These were invited to submit papers based on the theme of the colloquium, and 16 of these have papers that will soon be published in a special issue of the Proceedings of the National Academy of Sciences. The students who attended, including the four funded by the army grant, learned much of great value and interacted extensively with the speakers.



**Brain Produces Mind by Modeling
May 1-3, 2019
Arnold and Mabel Beckman Center, Irvine, CA**

Organized by: Richard Shiffrin, Danielle Bassett, Sophie Deneve, Nikolaus Kriegeskorte and Josh Tenenbaum

Agenda

Wednesday, May 1

- 5:00PM Bus from Hyatt Regency Newport Beach hotel to Beckman Center
- 5:30 PM Welcome buffet dinner – Dining Terrace
- 7:00 PM **Distinctive Voices Lecture** - Auditorium
Introduction by Richard Shiffrin, Indiana University Bloomington
Rebecca Saxe, Massachusetts Institute of Technology, *How the brain invents the mind*

Q & A facilitated by NAS staff
- 8:00PM Dessert reception with combined Sackler and Distinctive Voices audiences
- 8:45PM Bus from Beckman Center to Hyatt Regency Newport Beach hotel

Thursday, May 2

- 7:15 AM Bus from Hyatt Regency Newport Beach hotel to Beckman Center

7:30 AM Breakfast buffet – Beckman Center Dining Room

Session I.

Session Chair: Danielle Bassett, University of Pennsylvania

8:30 AM **Rich Shiffrin**, Indiana University Bloomington, *Connecting mind and brain*

9:10 AM **Mathilee Kunda**, Vanderbilt University, *Imagery-based AI*

9:50 AM **Niko Kriegeskorte**, Columbia University, *Letting mental models emerge: a bottom-up approach to understanding the top-down component of visual inference*

10:30 AM Break – Atrium

11:00 AM **Sophie Deneve**, École des Neurosciences Paris Île de France, *Circular inference, confirmatory bias and psychosis*

11:50 AM **Wilson Geisler**, University of Texas, *Theory of visual search*

12:30 PM Lunch - Beckman Center Dining Room
PNAS editor meets with speakers/authors

Session II.

Session Chair: Sophie Deneve, École des Neurosciences Paris Île de France

1:40 PM **Xaq Pitkow**, Rice University and Baylor College of Medicine, *Inferring what you think from what you do*

2:20 PM **Ann Collins**, University of California, Berkeley, *Hierarchical reinforcement learning supports generalization*

3:00: Break - Atrium

3:30 PM **Danielle Bassett**, University of Pennsylvania, *Network architectures supporting learnability*

4:10 PM **David Poeppel**, New York University, *Brain rhythms and the encoding of linguistic structure*

5:00 PM Student presentations: **Three minute flash talks.**

5:30 – 6:45 PM Reception on the Dining Terrace plus **Poster Session One**

6:45 PM: Dinner – Dining Patio

8:15 PM: **Poster Session Two**

9:15 PM Bus returns from Beckman Center to Hyatt Regency Newport Beach hotel

Friday, May 3

7:30 AM Bus from Hyatt Regency Newport Beach hotel to Beckman Center

7:45 AM Breakfast buffet – Beckman Center Dining Room

Session III.

Session Chair: Nikolaus Kriegeskorte, Columbia University

8:45 AM **Josh Tenenbaum**, Massachusetts Institute of Technology, *Reverse engineering common sense in the human mind and brain*

9:25 AM **Jeff Zacks**, Washington University at St Louis, *The Past in the Present: Involuntary Memory Retrieval Affects Online Event Representations*

10:05 AM **Marlene Cohen**, University of Pittsburgh, *Linking attentional changes in neuronal responses to perception*

10:55 AM Break - Atrium

11:15 AM **Stanislas Dehaene**, NeuroSpin/CNRS/College de France, *Understanding human singularity : Narrowing down the search*

11:55 AM **Ann Hermundstad**, Janelia Research Campus, *When to see the forest and when the trees: Towards a concrete understanding of abstraction*

12:35 PM Lunch - Beckman Center Dining Room

Session IV.

Session Chair: Josh Tenenbaum, Massachusetts Institute of Technology

1:40 PM **Brandon Turner**, Ohio State University, *Informing cognitive abstractions with neurophysiology*

2:20 PM **Alison Preston**, University of Texas, *Building knowledge by integrating memories across time*

3:00 PM Break - Atrium

3:30 PM **Talia Konkle**, Harvard University, *Content channeling along the ventral stream*

4:10 PM **Angela Yu**, University of California, San Diego, *Computational modeling of human face perception*

4:50 PM Closing Remarks – Richard Shiffrin, Indiana University Bloomington

5:00 PM **Student-Faculty Interaction**

6:30 PM Bus returns from Beckman Center to airport and Hyatt Regency Newport Beach hotel
Optional dinner for speakers staying over

