

Dr Paula Parpart

Curriculum Vitae

Experience

- 2019–present **Postdoctoral Researcher - AI and decision-making**, *Computational Neuroscience*, Experimental Psychology, University of Oxford, Oxford, UK.
- Human Information Processing lab, PI: Christopher Summerfield
 - My research developed a meta-learning neural network approach for learning human decision heuristics from scratch. Heuristics can be understood as regularizers or simple statistical models. We analyse a range of real-world datasets to understand under what circumstances heuristic regularizers outperform more complex approaches.
 - Other projects looked at reinforcement learning in humans and machines, and learning with stochastic gradient descent in mice and humans
- 2018–2019 **Postdoctoral Researcher - Behavioural Patterns in Financial Big Data**, *Behavioural Science Unit*, Lloyds Banking Group & Warwick Business School, UK.
- This project involved vast amounts of financial big data – individual banking transactions by over 20 million customers - to ask questions about behavioural patterns on a longitudinal and big data scale.
 - I build new predictive models based on behavioural constructs for deployment within the bank, with commercial impact
 - Responsible for communicating complex ideas to different teams & managing stakeholder relationships
- 2016–2018 **Founder & CEO at Brainpool.ai**, London, UK.
- I founded and build Brainpool AI out of UCL with two co-founders. It has grown into an established data science company in London and Toronto (Canada), operating a worldwide network of 500 academics in data science and machine learning, spanning PhDs, post-docs, professors and professionals.
 - Brainpool bridges the gap between academia and industry by creating a platform for academics to consult with organisations in government, healthcare, retail, and finance. Partners include IBM and Nvidia and clients range from Sainsburys to Tier-1 investment banks, and one of the biggest social networks.
 - Example projects include building a matching algorithm for a recruitment client, supervising a team of engineers to build neural network libraries for a large financial organisation, or identifying analytic use cases for a marine and energy company

- 2016–2017 **Teaching Fellow on MSc Cognitive Sciences**, *Department of Experimental Psychology, UCL*.
- Co-directed Masters course responsible for 3 core modules
 - Designed curriculum for core modules including Bayesian statistics, model comparison approaches to statistics, artificial intelligence approaches to cognitive science, principles of cognition, learning & inference, MSc research seminar, third year decision-making labs & first year seminar etc.
 - Supervisor and co-supervisor for 10 MSc and BSc students' research theses
 - Won Teaching Award for Outstanding Researcher Development & Outstanding Personal Support at 2017 Choice Teaching Awards
 - Pastoral care and mentoring of students
- 2012–2015 **Medical Decision Making Project**, *St Andrews Healthcare Psychiatric Hospital, Northampton, UK*.
- Project on improvement of clinicians risk assessment (jointly with Prof Brad Love, Lukasz Kopec): Analysed existing psychiatric test instrument and made improvement suggestions based on machine learning model developed during PhD.
- 2012 **Behavioural Insights Consultant**, *Cabinet Office, UK Government, London, UK*. Industry placement by the UCL Centre for Financial Computing & Analytics PhD funding
- Fraud prevention: Consulted on fraud detection models involving more data aggregation and improved statistical models such as Bayesian machine learning model developed during the PhD.
- 2007–2010 **Research Assistant**, *ABC Research Group, Max Planck Institute for Human Development, Berlin, Germany*.

Education

- 2013–2017 **PhD in Experimental Psychology**, *University College London, UK*,
Title: Why less can be more: A Bayesian Framework for Heuristics
Supervisors: Prof Bradley C. Love & Dr Maarten Speekenbrink.
- 2012–2013 **MRes in Computer Science**, *University College London, UK*,
Part of the 4-year EPSRC PhD program in Financial Computing. Focus: Statistical Computing and Machine Learning.
- 2010–2011 **MSc in Cognitive and Decision Sciences**, *University College London, UK*,
Supervisors: Dr Anne Hsu & Prof Nick Chater.
- 2006–2010 **Vordiplom (eqvl. Bsc) in Psychology**, *Humboldt University Berlin, Germany*.

Publications

Peer-reviewed articles

1. Summerfield, C. & **Parpart, P.**, (2022), Normative principles for decision-making in natural environments. *Annual Review of Psychology 2022, 73:1*, [Link](#)
2. **Parpart, P.** & Summerfield, C., (in preparation), Neural simplicity: meta-learning heuristics for multiattribute choice.
3. **Parpart, P.**, Galgali, A., Saxe, A., Zatka-Haas, P., Lak, A., & Summerfield, C., (in preparation), Learning biases in mice and humans result from learning with stochastic gradient descent.

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4. Muggleton, N., **Parpart, P.**, Newall, P., E., Leake, D., Gathergood, J., & Stewart, N. (2021), The association between gambling and financial, social and health outcomes in big financial data. *Nature Human Behaviour*, 1-8 [Link](#)
5. **Parpart, P.**, Schulz, E., Speekenbrink, M. & Love, B. (under review), Active learning reveals underlying decision strategies. Preprint: [bioRxiv](#)
6. **Parpart, P.**, Jones, M. & Love, B.C. (2018), Heuristics as Bayesian inference under extreme priors. *Cognitive Psychology*, 102, 127-144, [Link](#)
7. Guarda, P., **Parpart, P.**, Harvey, N., & Juan Carlos Muñoz (2018), Understanding decisions about time in public transport. *Proceedings of the 40th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
8. **Parpart, P.**, Schulz, E., Speekenbrink, M. & Love, B. (2015), Active learning as a means to distinguish among prominent decision strategies. *Proceedings of the 37th Annual Conference of the Cognitive Science Society*, PDF
9. Cokely, E.T., **Parpart, P.**, & Schooler, L.J. (2009), On the link between cognitive control and heuristic processes. *Proceedings of the 31st Annual Conference of the Cognitive Science Society*. PDF

[Peer-reviewed abstracts, presentations & posters](#)

[2020](#)

12. **Parpart, P.**, Schulz, E. & Love, B. (2020), Active learning as a tool for model comparison in psychology. *Workshop on Efficient Coding to Information Gain: Information-Theoretic Principles in Models of Human Decision Making, 42nd Annual Meeting of the Cognitive Science Society*.

[2018](#)

13. **Parpart, P.**, Schulz, E. & Love, B. (2018), Robustness through sparsity: A comparison of decision heuristics. *Poster presented at the 40th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
14. **Parpart, P.** (2018), Reinterpreting heuristics as Bayesian inference. *Workshop on Contemporary Decision Making, 40th Annual Meeting of the Cognitive Science Society*.

[2016](#)

15. Kopec, L., **Parpart, P.**, Wallang, P. & Love, B.C. (2016), Less Information Can Improve Clinical Risk Assessments. *Society for Medical Decision Making Biennial European Conference, 2016, London, United Kingdom*

[2015](#)

16. **Parpart, P.**, Schulz, E., Speekenbrink, M. & Love, B. (2015), Active learning as a means to distinguish among prominent decision strategies. *Talk presented at the 37th Annual Conference of the Cognitive Science Society, 2015, Pasadena, CA*.
17. **Parpart, P.**, Jones, M., & Love, B.C. (2015), Simple Heuristics as Special Cases of Bayesian Inference. *Poster presented at the Memory and Decision Making Workshop, University of Basel, Basel, Switzerland*

18. **Parpart, P.**, Jones, M., & Love, B.C. (2015), Simple Heuristics as Special Cases of Bayesian Inference. Simple Heuristics as Special Cases of Bayesian Inference. *Poster presented at the Cumberland Lodge PhD Conference, Windsor, United Kingdom 2014*
19. **Parpart, P.**, Jones, M., & Love, B.C. (2014), Heuristics as a Special Case of Bayesian Inference. *Talk at Decision Making Bristol 2014, University of Bristol, Bristol, United Kingdom*
20. **Parpart, P.**, Jones, M., & Love, B.C. (2014), Heuristics as Special Cases of Bayesian Inference. *Poster presented at the 36th Annual Conference of the Cognitive Science Society, 2014, Quebec City, Canada*
21. **Parpart, P.**, Jones, M., & Love, B.C. (2014), Heuristics as Special Cases of Bayesian Inference. *Talk at the Mathematical Psychology Conference 2014, Quebec City, Canada*
22. **Parpart, P.**, Jones, M., & Love, B.C. (2014), Heuristics as Special Cases of Bayesian Inference. Reconciling irrational and adaptive views of heuristics. *Talk at the Cumberland Lodge PhD Conference, Windsor, United Kingdom 2013*
23. **Parpart, P.**, Jones, M., & Love, B.C. (2013), Reconciling irrational and adaptive views of heuristics. *Talk at the 34th International Conference on Subjective Probability, Utility and Decision Making (SPUDM24), ISCE, Barcelona, Spain*
24. **Parpart, P.**, Jones, M., & Love, B.C. (2013), When is it rational to rely on heuristics? *Poster presented at the 35th Annual Conference of the Cognitive Science Society, 2013, Berlin, Germany 2011*
25. **Parpart, P.**, & Cokely, E.T. (2011), When does Cognitive Control lead to Biases? Evidence from Memory and Stock Profit Estimation Tasks. *Poster presented at the 23rd International Conference on Subjective Probability, Utility and Decision Making (SPUDM23), Kingston Upon Thames, United Kingdom*
26. Okan, Y., **Parpart, P.**, Cokely, E.T. & Garcia-Retamero, R. (2011), The effect of misleading graphs on the comprehension of health and political communications: Who is more susceptible to misinterpret data? *Poster presented at the 23rd International Conference on Subjective Probability, Utility and Decision Making (SPUDM23), Kingston Upon Thames, United Kingdom*
27. Okan, Y., Woller-Carter, M., Simon, S.R., Russell, K., Ghazal S., **Parpart, P.**, Garcia-Retamero R., Cokely, E.T. (2011), Overcoming distortions in political and health communication: Mechanisms of graph literacy. *Poster presented at the 83rd Annual meeting of the Midwestern Psychological Association, Chicago, IL. 2010*
28. **Parpart, P.**, & Cokely, E.T. (2010), Fluency and cognitive control in judgment: Influences of memory and elaborative encoding. *Poster presented at the Proceedings of the 32nd Annual Conference of the Cognitive Science Society, 2010, Portland, Oregon*

2009

29. Cokely, E.T., **Parpart, P.**, & Schooler, L.J. (2009), Mechanisms of superior judgment: Ironic effects of cognitive control. *Talk at the 23rd Annual Meeting of the Society for Judgment and Decision-Making, Boston, MA.*
30. Cokely, E.T., & **Parpart, P.** (2009), There is no “the” heuristic system: Modes of cognitive control in judgment and decision making. *Talk at the 16th European Society for Cognitive Psychology Conference, Krakow, Poland*
31. Cokely, E.T., & **Parpart, P.** (2009), Modes of cognitive control in judgment & decision making. *Talk at the 22nd Subjective Probability Utility Decision Making (SPUDM22) Conference, Reverso, Italy*
32. Cokely, E.T., & **Parpart, P.** (2008), There is no “the” heuristic system: Evidence of reflective heuristic processing. *Poster presented at the 49th Annual Meeting of the Psychonomic Society, Chicago, IL.*

2008

33. **Parpart, P.** & Cokely, E.T. (2008), Individual differences and the use of fluency in judgment: Paradoxical evidence of reflective heuristic processing. *Poster presented at the 2nd Biennial Symposium on Personality and Social Psychology, Warsaw, Poland*

Selected Invited Talks

- Aug 2020 **Parpart, P.**, Learning heuristics from scratch with neural networks. Invited Talk at the Computational Principles of Intelligence Lab (PI: Eric Schulz), Max Planck Institute for Biological Cybernetics, Tuebingen, Germany
- May 2018 **Parpart, P.**, Advances in machine learning and artificial intelligence. Invited keynote speaker at the 25th Anniversary of Kx Systems (Big data technology kdb+), New York City, New York
- Feb 2018 **Parpart, P.**, Who owns artificial intelligence? Invited Talk at the Digital Economy Network CDT Symposium by the EPSRC, Digital Catapult Centre, London, UK
- Jan 2018 **Parpart, P.**, Will AI be restricted by capitalism or is AI communist? Talk at the AI World Congress 2018, London, UK
- Dec 2017 **Parpart, P.**, Democratization of AI. Talk at Telegraph DEN Live Conference, London, UK
- Nov 2017 **Parpart, P.**, Brainpool - Revolutionizing healthcare and the NHS with AI. Invited Talk at the AI Stage GIANT Healthcare Conference, London, UK
- Nov 2017 **Parpart, P.**, The future of data science. Invited Talk at the Doctoral Training Centre for Financial Computing & Analytics, UCL, London, UK
- Nov 2017 **Parpart, P.**, Brainpool democratizes access to elite AI and ML scientists. Invited Talk at Emerging Technologies: Machine Learning Academy, IDEA London, UK
- Oct 2017 **Parpart, P.**, The future of science-industry collaboration. Invited Talk at the Moore-Sloan Lunchtime talks (Tassos Noulas), Center for Data Science, NYU, New York

Sept 2017 **Parpart, P.**, A new model for AI consulting. Invited Talk at the EPSRC Entrepreneurship Workshop, Digital Catapult Center, London, UK

Awards & Funding

- June 2019 **EPS Travel Grant**, *Research stay at the Santa Fe Institute for Complex Systems, New Mexico*, funded by the Experimental Psychology Society, United Kingdom.
- 2017 **Teaching Award for Outstanding Reseacher Development & Outstanding Personal Support**, *2017 Student Choice Teaching Awards*, UCL, Department of Experimental Psychology.
- 2014 **Best Talk Prize Sully Scholarship**, *PhD upgrade prize*, UCL Department of Experimental Psychology.
- 2014 **Best Talk Prize**, *Award for best oral presentation at the annual conference of UCL's postgraduate peer group*, Windsor, United Kingdom.
- 2012-2016 **EPSRC Financial Computing Grant**, *Full 4-year scholarship for PhD at UCL, Centre for Doctoral Training in Financial Computing and Analytics*, London, United Kingdom.
- 2010-2011 **German Government Graduate Scholarship (DAAD)**, *Full scholarship for MSc at UCL*, German Government Exchange Service, London, United Kingdom.
- 2009 **NYU Student Scholarship**, *Full scholarship for study abroad term at New York University*, Humboldt University, Berlin, Germany.
- 2008 **Poster Award**, *Second Biennial Conference on Personality and Social Psychology*, awarded by Prof. Michael W. Eysenck, Prof Maruszewski und Prof Gerald Matthews, Warsaw, Poland.
- 2007 **Student Experiment Prize**, *Student competition for Experimental study design*, Humboldt University, Berlin, Germany.

Research visits & workshops

- June 2019 **Complex Systems Summer School**, *Santa Fe Institute for Complex Systems, University of Cambridge, New Mexico, US*,
4-week intensive project work in complexity sciences with focus on nonlinear dynamics, information theory, scaling theory, adaptation and evolution, networks, machine learning, agent-based models, and more. Project outcome: write-up for publication.
- Nov 2016 **Isaac Newton Institute for Mathematical Sciences**, *University of Cambridge, Cambridge, UK*,
Invited participant at the 4-week workshop on "Probability and Statistics in Forensic Science"
Organized by: Norman Fenton, Leila Schneps, David Balding, Richard Gill & David Lagnado.
- 2011, 2018 **Visitor**, *Center for Adaptive Rationality (ARC)*, Max Planck Insitute for Human Development, Berlin, Geramany.

Programming & Tools

R, Python, Matlab, data visualization (ggplot2, matplotlib, D3), JavaScript, HTML, CSS, SQL, MySQL, Teradata, Stata, Aster, Java, PHP, SPSS, LaTeX, WinBugs, Mechanical Turk, Unipark, Qualtrics, psiTurk

Scientific Reviewing

Ad hoc reviewer **Journal of Experimental Psychology: LMC**
Cognitive Science Society Conference
Cognition

Book Review *In Two Minds* (Jonathan St. Evans)

References

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