MICHAEL K. MCCOURT

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INDUSTRY EXPERIENCE

Sturdy Statistics   *2025–present*   Co-Founder & CEO

· *Co-founded Sturdy Statistics to help organizations make sense of unstructured data using accessible, high-quality statistical tools.*
· *Helped design and implement our core technology, and developed key intellectual property.*
· *Guided the company through its initial growth as we built a foundation for long-term impact.*

Invoca   *2022–2024*   Senior Principal Data Scientist

· *Re-architected Invoca's machine learning codebase to enhance scalability and flexibility for both production and research use cases.*
· *Mentored interns and junior scientists, supporting their career development while maintaining rapid R&D progress.*
· *Media Interview: "Real-time conversational insights from phone call data with Mike McCourt from Invoca." (Practical AI #77)*

2020–2022   Principal Data Scientist

· *Spearheaded customer-first R&D initiatives by identifying pain points and developing a novel natural language classifier tailored to client needs. Delivered production-ready code and submitted a supporting patent application.*
· *Collaborated across product and data science leadership to plan and execute the migration of customers from the DialogTech platform following acquisition.*
· *Primary inventor on three AI-focused patents:*

  – *US 12,230,253 - Automatic classification of phone calls*

  – *US 11,429,901 - Incorporating domain knowledge into AI models*

  – *US 2024/0312451 (pending) - Topic-based semantic search*

2019–2020   Staff Data Scientist

· *Received the President's Club award for exceptional contributions to the company.*
· *Invented a Bayesian deep learning framework for natural language processing using the hierarchical Pitman-Yor process. (Featured in press, blog, and industry coverage)*
· *Mentored three interns on impactful R&D projects, with one joining the team full-time before starting a Ph.D.*
· *Primary inventor on three AI-focused patents:*

  – *US 11,115,520 – Signal Discovery using AI Models*

  – *US 11,521,601 – Detecting Extraneous Topic Information*

> – US 11,804,216 – *Generating Training Datasets Using Discovery Models*

2018–2019 **Data Scientist**

· *Re-implemented a major third-party ML service in-house, reducing costs and enabling tighter integration with Invoca's platform.*
· *Partnered with product, sales, and customer success teams to uncover customer pain points and rapidly prototype solutions.*
· *Mentored an intern who later joined the team full-time.*
· *Sole inventor on two granted/pending patents:*

> – US 10,719,783 – *Binary Signal Classifiers*
>
> – US 11,423,330 – *Performance Score Determiner*

PATENTS

9. McCourt, US 12,230,253 B2 (Awarded: Feb 18, 2025)
   "*Automatic classification of phone calls using representation learning based on the hierarchical pitman-yor process*"

8. McCourt, Ghodoussi & Borda, US 2024/0312451 A1 (Filed: Mar 17, 2023)
   "*Topic-based semantic search of electronic documents based on machine learning models from bayesian belief networks*"

7. McCourt & Borda, US 11,429,901 B1 (Awarded: Aug 30, 2022)
   "*Pitman-Yor process topic modeling pre-seeded by keyword groupings*"

6. McCourt & Praturu, US 11,804,216 B2 (Awarded: Oct 31, 2023)
   "*Generating training datasets for a supervised learning topic model from outputs of a discovery topic model*"

5. McCourt & Lawrence, US 11,521,601 B2 (Awarded: Dec 6, 2022)
   "*Detecting extraneous topic information using artificial intelligence models*"

4. McCourt, Storlie, Borda, Lawrence, et al., US 11,115,520 B2 (Awarded: Sep 7, 2021)
   "*Signal discovery using artificial intelligence models*"

3. McCourt, US 10,719,783 B2 (Awarded: Jul 21, 2020)
   "*Binary signal classifiers that tolerate incorrect training data*"

2. McCourt, US 11,423,330 B2 (Awarded: Aug 23, 2022)
   "*Performance score determiner for binary signal classifiers*"

1. Storlie, Borda, McCourt, Kirchhoff, et al., US 10,332,546 B1 (Awarded: Jun 25, 2019)
   "*Desired signal spotting in noisy, flawed environments*"

EDUCATION AND ACADEMIC POSITIONS

UC Santa Barbara *2016–2018* KITP and Hubble Fellow

2015–2016 Postdoc

Harvard	*2014–2015*	ITC Fellow
UC Berkeley	*2008–2014*	Graduate Student

· *2014: Ph.D. astrophysics*
· *2010: M.A. astrophysics*
· *advisor: Eliot Quataert*

Stanford University	*2005–2008*	Undergraduate Student

· *2008: B.S. physics*
· *concentration in theoretical physics*
· *advisor: Roger Blandford*

ACADEMIC AWARDS

UC Berkeley	*April 2014*	Mary Elizabeth Uhl Prize
	May 2012	Robert J. Trumpler Graduate Student Excellence Award
Stanford University	*Fall 2007*	Nomination for the Churchill Scholarship
	Summer 2006	VPUE Grant for Undergraduate Research
Rose Hills Foundation	*Summer 2007*	Rose Hills Award for Undergraduate Research

ACADEMIC SERVICE

- Co-instituted and co-organized a new lunch talk series at UCSB

- Organizer ("Mentor Master") for the UC Berkeley Astronomy Department peer-mentoring system.

- Referee for the *Astrophysical Journal* (and *ApJ Letters*), *MNRAS* (and *MNRAS Letters*), *Astrophysics and Space Science*, *Journal of Fluid Mechanics*, and *Nature Letters*.

- Author of several open-source emacs packages, including a popular major mode for editing gnuplot scripts and a browser for fetching BibTeX entries from ADS. Both are available in the MELPA package repository

FUNDING PROPOSALS

	grant	award ($k)	year
5	HST THEORY GRANT	120	2018
4*	ATP THEORY GRANT	642	2017
3	ATP THEORY GRANT	410	2017
2	HUBBLE FELLOWSHIP	350	2015
1	CHANDRA THEORY GRANT	60	2011
	total:	1,582	

* denotes proposals where I was a Co-I

COMPUTING GRANTS

	agency	award ($\times 10^6$ hour)	value ($k)	year
8	NSF	5.6	23	2017
7	NSF	1.6	55	2016
6	NSF	1.2	40	2016
5	NSF	0.6	20	2015
4	NSF	3.2	110	2015
3	NASA	4.7	100	2015
2	NSF	2.6	89	2014
1	NASA	2.4	75	2014
	total:	21.9	512	

most of these proposals are collaborative; this list includes only grants where I was a primary author

OBSERVING PROPOSALS

	facility	award (hours)	year
4	VLA	6.0	2017
3	GEMINI	1.0	2016
2	VLA	4.0	2015
1	VLA	6.0	2014

TEACHING EXPERIENCE

UC Santa Barbara

2017 — Organized and taught a fluid dynamics "bootcamp" for graduate students

2016–present — Supervising undergraduate research
· *will soon result in two student-led publications*

UC Berkeley

2008–2009 — Graduate Student Instructor

Stanford University

2008 — Undergraduate Instructor
· *co-designed and taught a course on numerical methods (Physics 90SI) under the student-initiated course program.*

PUBLICATIONS

25. Madigan, Zderic, er, McCourt, et al., *AJ* (2018)
"*On the Dynamics of the Inclination Instability*"

24. Ji, Oh, & McCourt, *MNRAS* (2018)
   "*The impact of magnetic fields on thermal instability*"

23. Madigan, Halle, rew, Moody, et al., *ApJ* (2018)
   "*Dynamical Properties of Eccentric Nuclear Disks: Stability, Longevity, and Implications for Tidal Disruption Rates in Post-merger Galaxies*"

22. McCourt, Oh, O'Leary, & Madigan, *MNRAS* (2018)
   "*A characteristic scale for cold gas*"

21. Gronke, Dijkstra, McCourt, & Oh, *A&A* (2017)
   "*Resonant line transfer in a fog: using Lyman-alpha to probe tiny structures in atomic gas*"

20. Fielding, Quataert, McCourt, & Thompson, *MNRAS* (2017)
   "*The impact of star formation feedback on the circumgalactic medium*"

19. Madigan, McCourt, & O'Leary, *MNRAS* (2017)
   "*Using gas clouds to probe the accretion flow around Sgr A*: G2's delayed pericentre passage*"

18. Guillochon & McCourt, *ApJ* (2017)
   "*Simulations of Magnetic Fields in Tidally Disrupted Stars*"

17. Gronke, Dijkstra, McCourt, & Oh, *ApJ* (2016)
   "*From Mirrors to Windows: Lyman-alpha Radiative Transfer in a Very Clumpy Medium*"

16. Guillochon, McCourt, Chen, Johnson, et al., *ApJ* (2016)
   "*Unbound Debris Streams and Remnants Resulting from the Tidal Disruptions of Stars by Supermassive Black Holes*"

15. Madigan & McCourt, *MNRAS* (2016)
   "*A new inclination instability reshapes Keplerian discs into cones: application to the outer Solar system*"

14. Lecoanet, McCourt, Quataert, Burns, et al., *MNRAS* (2016)
   "*A validated non-linear Kelvin-Helmholtz benchmark for numerical hydrodynamics*"

13. McCourt & Madigan, *MNRAS* (2016)
   "*Going with the flow: using gas clouds to probe the accretion flow feeding Sgr A**"

12. McCourt, O'Leary, Madigan, & Quataert, *MNRAS* (2015)
   "*Magnetized gas clouds can survive acceleration by a hot wind*"

11. McBride & McCourt, *MNRAS* (2014)
   "*Bent radio jets reveal a stripped interstellar medium in NGC 1272*"

10. Wagh, Sharma, & McCourt, *MNRAS* (2014)
   "*Thermal conduction and multiphase gas in cluster cores*"

9. McCourt, Quataert, & Parrish, *MNRAS* (2013)
   "*What sets temperature gradients in galaxy clusters? Implications for non-thermal pressure support and mass-observable scaling relations*"

8. Sharma, McCourt, Parrish, & Quataert, *MNRAS* (2012)
   "*On the structure of hot gas in haloes: implications for the L_X-T_X relation and missing baryons*"

7. Parrish, McCourt, Quataert, & Sharma, *MNRAS* (2012)
   "The effects of anisotropic viscosity on turbulence and heat transport in the intracluster medium"

6. Sharma, McCourt, Quataert, & Parrish, *MNRAS* (2012)
   "Thermal instability and the feedback regulation of hot haloes in clusters, groups and galaxies"

5. McCourt, Sharma, Quataert, & Parrish, *MNRAS* (2012)
   "Thermal instability in gravitationally stratified plasmas: implications for multiphase structure in clusters and galaxy haloes"

4. Parrish, McCourt, Quataert, & Sharma, *MNRAS* (2012)
   "Turbulent pressure support in the outer parts of galaxy clusters"

3. McCourt, Parrish, Sharma, & Quataert, *MNRAS* (2011)
   "Can conduction induce convection? On the non-linear saturation of buoyancy instabilities in dilute plasmas"

2. Bradač, Schrabback, Erben, McCourt, et al., *ApJ* (2008)
   "Dark Matter and Baryons in the X-Ray Luminous Merging Galaxy Cluster RX J1347.5-1145"

1. Samulon, Islam, Sebastian, Brooks, et al., *Phys. Rev. B* (2006)
   "Low-temperature structural phase transition and incommensurate lattice modulation in the spin-gap compound $BaCuSi_2O_6$"

SELECTED PRESENTATIONS

29.	*Invited Talk*, What matter(s) around galaxies	June 2017
28.	*Lunch Talk*, UC Santa Barbara	March 2017
27.	*Contributed Talk*, Hubble Fellow Symposium	March 2017
26.	*Astronomy Colloquium*, University of Washington	February 2017
25.	*MPS Seminar*, UC Santa Cruz	October 2016
24.	*Invited Talk*, Fellows at the Frontier Conference	September 2016
23.	*Invited Talk*, Theory & Computation in the ICM	August 2016
22.	*Seminar*, Cold Universe Workshop	June 2016
21.	*Astronomy Seminar*, UCSB	April 2016
20.	*Lunch Talk*, Harvard ITC	April 2015
19.	*Pizza Lunch*, Harvard ITC	April 2015
18.	*Lunch Talk*, UCSB	April 2015
17.	*Lunch Talk*, UC Berkeley	March 2015
16.	*Contributed Talk*, Black Holes in Dense Star Clusters	January 2015
15.	*Cosmology Seminar*, Yale	September 2014
14.	*CIERA Astrophysics Seminar*, Northwestern	September 2014

13. *Lunch Talk*, UC Berkeley   February 2014

12. *TAPIR Seminar*, Caltech   October 2013

11. *KIPAC "Tea-Talk" Seminar*, Stanford   October 2013

10. *ITC Seminar*, Harvard CfA   September 2013

9. *Geo- and Astro-physical Fluid Dynamics Seminar*, UCSC   April 2013

8. *Invited Talk*, SnowCluster conference   March 2013

7. *Astrophysics Seminar*, UCSB   October 2012

6. *Theory Seminar*, CITA   October 2012

5. *Informal Astrophysics Seminar*, Princeton IAS   October 2012

4. *Invited Talk*, Theory & Computation in the ICM   August 2012

3. *KITP Theory Lunch talk*, UCSB   April 2011

2. *Contributed Talk*, Theory & Computation in the ICM   August 2010

1. *KIPAC "Tea-Talk" Seminar*, Stanford   August 2006

USELESS AND UNUSUAL SKILLS

· *building wooden boats and furniture*
· *restoring old railroad lanterns (hot- and cold-blast)*
· *restoring vintage cameras and fountain pens*
· *converting cinema film for use in still cameras*
· *designing and building lightweight camping gear*
· *onetime holder of a federal pyrotechnics permit*