MICHAEL L. BRUNDAGE

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BOARD MEMBER

University of Washington Data Science Masters Industry Advisory Board Member	Sep 2021 – present
Washington State University Data Analytics Industry Advisory Board Member	Mar 2022 – present
National Institute of Statistical Sciences Board Trustee	Jun 2020 – Jun 2023

EXPERIENCE

Meta fka **Facebook** – AI Training Experiences (*Senior Staff Software Engineer*) — Jul 2023 – present
- Technical Lead for Model Understanding algorithms.
- Created the detection algorithm that alerts ML model owners for training instability or loss divergence.
- Creating model debugging tools using intermediate logging.

Meta fka **Facebook** – Infrastructure Data Science (*Senior Staff Research Data Scientist*) — May 2021 – Jul 2023
- Data Science Technical Lead for AI Infrastructure metrics.
- Advised AI Monitoring & Observability efforts like Hawkeye.
- Created metrics for Ads ML Prediction Robustness.
- Top contributor to open source Kats time series library.

Google – Core Developer Intelligence (*Software Engineer*) — Jan 2019 – Apr 2021
- Created predictive models for developer infrastructure.
- Created Developer Intelligence metrics and dashboards, including for COVID-19 impact. Cited by CFO.
- Presented invited keynote at internal Anomaly Detection Summit.
- Volunteered at 2019 Women in Statistics and Data Science event.

Google – Supply Chain (*Software Engineer*) — Nov 2016 – Jan 2019
- Created automated machine learning forecast for Google's Consumer Hardware.
- Created weekly business review metrics decks for Supply Chain teams.
- Taught metrics design and data science to hundreds of other Googlers.
- Presented at JSM 2018, "What Statisticians Need to Know to Work in Tech".

Microsoft Corporation – Windows & Devices Group (*Principal Data Scientist*) — Jan 2015 – Oct 2016
- Shipped Windows 10.
- Architect for the WDG Experimentation Platform.
- Led/advised/completed various data science projects across Microsoft.
- Peer reviewer for the Microsoft Journal of Applied Research (MSJAR).
- Session Chair for the Machine Learning, Analysis, & Data Science conference (MLADS).

Amazon – Amazon Go (*Principal Engineer*) — Nov 2012 – Jun 2013
- First engineer hired into the Amazon Go project.
- Designed and implemented the technical architecture, and created CEO demonstrations.
- Represented Amazon at the MIT Media Lab.
- Hired 30+ senior/Principal software engineers and research scientists.

Amazon – Search Experience (*Principal Engineer*) — Mar 2009 – Nov 2012
- Co-created the Data Science (today Applied Scientist) role and career ladder.
- Changed Amazon Search page architecture to AJAX and launched many features: client-side error and event logging, a novel click prediction algorithm, internal metrics.
- Drove company-wide and Search page latency reduction and advised external CEOs.
- Created one of the challenges for Amazon's first-ever Machine Learning HackDay.
- Created many dozens of A/B experiments with significant business impact (revenue and page speed).
- Bar Raiser for Principal Engineers and Data Scientist interviews.
- Analyzed petabyte data sets of customer behavior and website latency.

Yahoo, Inc. – Executive Technology & Strategy (*Distinguished Architect*) — Dec 2007 – Dec 2008
- Advised CEO and executive staff on deep technical strategy and M&A, and technical liaison for AT&T relationship.
- Created the Cloud Computing and Audience Service Engineering organizations.
- Implemented iPhone applications and other technical demonstrations.

Yahoo, Inc. – Platform (*Senior Principal Architect*)   Apr 2007 – Dec 2007
- Opened and staffed the Yahoo! Bellevue office.
- Invented the Yahoo! Query Language (YQL).
- Implemented the first version of the internal Web Services toolkit and Y!OS Yahoo! Open Strategy.
- Acted as local "paranoid" (security architect).

Microsoft Corporation – Xbox Console & Consumer Software (*Emulation Ninja*)   Nov 2005 – Apr 2007
- Responsible for the Xbox 360 kernel and operating system.
- Led the virtual Xbox performance team.
- Shipped three system updates and four updates to backwards compatibility.
- Implemented MP4 support for Xbox Live Video Marketplace and Zune connectivity.

Microsoft Corporation – Xbox Console & Consumer Software (*Software Design Engineer*)   May 2004 – Nov 2005
- Implemented major parts of the Xbox emulator for backwards compatibility.
- Shipped the Xbox 360.
- Created the compatibility beta program, FAQ, and customer support pages on xbox.com.
- Implemented parts of the Xbox 360 Dashboard and Guide.

Microsoft Corporation – WebData XML Team (*Software Design Engineer*)   Jan 2002 – May 2004
- Invented the .NET XML query architecture and System.Xml.Query namespace.
- Responsible for Microsoft's XML query optimizer for XQuery and XSLT.
- Shipped SQL Server 2000 & 2005, Visual Studio 2005, Windows XP, and Office 2007.
- Advised many other Microsoft teams and external customers.
- Presented on Microsoft technologies at major industry conferences.

Microsoft Corporation – SQLXML Team (*Software Design Engineer*)   Oct 1999 – Jan 2002
- Responsible for XPath to SQL translation.
- Shipped SQL Server 2000 and four SQLXML updates.
- Prototyped early XQuery functionality.

Caltech / **NASA JPL** – Interferometry Science Center (*Senior Software Engineer*)   Sep 1998 – Sep 1999
- Managed the ISC software development team.
- Contributed to the Keck Interferometer in Hawaii, the Space Interferometry Mission, and the Spitzer Space Telescope.
- Implemented terabyte-scale data archives, user interfaces, and numerical algorithms.
- Created the ISC software development environment and processes.

Caltech / **NASA JPL** – Infrared Processing & Analysis Center (*Computing Analyst*)   Jun 1996 – Sep 1998
- Responsible for astrophysics simulation software still in use today.
- Implemented parts of AstroVR, a pioneering and influential early Internet project.
- Created the IPAC Software Seminar Series, which is still active today.
- Contributed to the 2-Micron All-Sky Survey (2MASS) project.

EDUCATION

University of Washington – M.S. in Mathematics   Aug 1994 – Jun 1996
Caltech – B.S. in Mathematics   Aug 1990 – Jun 1994
- Elected Vice President of the incorporated Caltech undergraduate student body.
- Elected Chairman of the Board of Control (Honor System executive committee).

AWARDS

Google spot bonuses (7) and peer bonuses (23)	2017 – 2020
Microsoft Gold Star	2006
Microsoft Gold Star	2003
NASA Grant NRA-96-10-OSS-055, A Collaborative Environment for the Space Interferometer Mission	1996
Caltech Hinrichs Leadership Award (outstanding graduating senior)	1994
Caltech Don Shepard Essay Contest Winner	1993
Caltech Robert Andrews Millikan Scholar	1992
Caltech Robert Andrews Millikan Scholar	1991
US National Merit Scholar	1990

SELECT PATENTS (21 total)

US Patent 10,296, 814, **Automated and periodic updating of item images data store** 2019

US Patent 9,733, 783, **Controlling a user interface** 2017

US Patent 9,299,090, **Predictive page loading based on suggestion data** 2016

US Patent 8,949,677, **Detecting anomalies in time series data** 2015

US Patent 8,949,107, **Adjusting search result UI based upon query language** 2015

US Patent 8,898,137, **URL rescue by execution of search using information extracted from invalid URL** 2014

US Patent 8,838,522, **Identifying user segment assignments** 2014

US Patent 8,682,964, **Progressively loading network content** 2014

US Patent 8,307,073, **URL rescue by correction of encoding errors** 2012

US Patent 7,519,577, **Query intermediate language method and system** 2009

US Patent 7,496,599, **System and method for viewing relational data using a hierarchical schema** 2009

US Patent 7,383,255, **Common query runtime system and API** 2008

US Patent 7,146,352, **Query Optimizer System and Method** 2006

SELECT PUBLICATIONS

The M4 Forecasting Competition — A Practitioner's View 2019
Chris Fry, Michael Brundage The International Journal of Forecasting

The Circumstellar Structure of the Class I Protostar TMC-1 2006
Susan Terebey, David Van Buren, Michael Brundage, and Terry Hancock The Astrophysical Journal

XQuery: The XML Query Language 2004
Michael Brundage Addison-Wesley

Professional XML Databases 2000
Kevin Williams, Michael Brundage, et al. Wrox Press

Microsoft SQL Server 2000 XML Features 2001
Michael Brundage, Andrew Conrad TechEd Europe, Barcelona

Developing XML-Driven Applications with SQL Server 2000 2001
Michael Brundage, Andrew Conrad TechEd Atlanta & TechEd Europe

XML Views in SQL Server 2000 2000
Michael Brundage XML DevCon Fall, San Jose, CA

A Candidate Protoplanet in the Taurus Star Forming Region 1998
Susan Terebey, Dave Van Buren, T. Hancock, D. L. Padgett, and Michael Brundage The Astrophysical Journal

10 Micron Search for Cool Companions of Nearby Stars 1998
Dave Van Buren, Michael Brundage, Michael Ressler, and Susan Terebey The Astronomical Journal

Near-infrared Hubble Space Telescope Images of Nearby Protostars 1998
Susan Terebey, Dave Van Buren, T. Hancock, D. L. Padgett, and Michael Brundage Bulletin of the AAS, Vol 30

An Object-Oriented Approach to Radiative Transfer in Arbitrary Media 1997
David Van Buren, Michael Brundage, Susan Terebey Bulletin of the AAS, Vol 29

From the Even Cycle Mystery to the L-Matrix Problem and Beyond 1996
Michael Brundage Thesis, University of Washington

AstroVR, An On-line Collaborative Environment for Research in Astrophysics 1994
Dave Van Buren, Michael Brundage, Pavel Curtis, and Dave Nichols Proceedings 1994 ADASS Conference