

REED D. MEYER

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Summary

Researcher interested in applying methodologies from the physical sciences to challenging problems involving optimization or the understanding and rendering of data.

Skills

- Skills with **LinkedIn Endorsements** include: Algorithms (72 received), SEO (44), Statistics (37), Programming (34), Linux (32), Java (27), IDL (19), SEM (18), Data Analysis (14), Web Marketing (12), and Astronomy (11).
- Experienced in: **Big and low-signal datasets** (major consumer websites; astronomical observations), **numerical and statistical analysis** (optimization problems; model fitting/regression; Bayesian inference; ranking systems), **experiments and simulations** (A/B experiments; scientific instrumentation; Monte Carlo simulations), **large and small databases** (Hadoop/Hive; SQL Server; PostgreSQL; MySQL), and **Windows and UNIX/Linux software development** (data analysis software; websites; device drivers; GUIs; Linux systemadministration since 1994).
- Have programmed primarily in **Java since 2005**, C/C++ from 1996 to 2004, Fortran from 1992 to 1996, and BASIC in the 1980s. Also proficient in IDL programming, UNIX/Linux shell scripting, and HTML. Have used or studied Rexx, Perl, Lisp, and assembly language in the past. Have learned languages in 1–2 days via hands-on use.

Education

- **Ph.D., Astronomy, Yale University, 2002**
- M.Phil., Astronomy, Yale, 1996
- M.S., Astronomy, Yale, 1994
- B.S. with Distinction and with Honors, Physics, The Pennsylvania State University, 1993
- B.S. with Distinction and with Honors, Astronomy and Astrophysics, Penn State, 1993
- Mathematics minor, Penn State, 1993

Work Experience

2015–present: Website entrepreneur.

- In May, 2015, started a one-year sabbatical to **develop my own data-driven websites**, one in the medical field and one in entertainment, the second of which remains under active development. These projects allowed me to apply, in an entrepreneurial setting, my twin passions of data analysis and software development.

2013–2015: Principal Scientist, KAYAK, a subsidiary of The Priceline Group, Inc.

- Was a member of the **KAYAK Analytics team**, assigned mainly to the Search Engine Optimization (SEO) team.
- For the SEO team, made recommendations for changes to the website, developed **optimization-related software**, and performed **data pulls and data analysis**, both on my initiative and at the request of SEO team members.
- For the Analytics team, investigated the performance of the **experimentation infrastructure**, helped to maintain that infrastructure, and serviced experiment administration and analysis requests from teams throughout KAYAK.
- For others, including the Public Relations (PR) team and various product owners, **answered data requests**, which involved pulling data from large databases, analyzing them, and reporting the results in a straightforward way.

2007, 2010–2013: Independent Web marketing consultant.

- Provided search engine optimization (SEO) and related consulting services, including the development of a **complex internal link optimization algorithm**. Client companies or websites included: HelpWanted.com; Indigo Digital, Inc.; Mobicious, Inc.; Cheapflights; Torre dello Ziro B&B; and Venere.com.

2005–2011: Software Engineer, Researcher, and Senior Researcher, TripAdvisor LLC.

- Roles at TripAdvisor fell broadly into two categories: **Data scientist** and **SEO business owner/product owner**.

Data scientist

- Designed and implemented **TripAdvisor’s Popularity Index**, its algorithm for ranking hotels based on traveler feedback. It is closely followed in the hotel industry because higher rankings correlate with increased bookings.
- Designed **TripAdvisor’s Value Index**, a way of showing users hotels that offered better quality for room cost.
- Provided the Marketing team with many reports analyzing user reviews and user trends, including the bases for **TripAdvisor’s Travelers’ Choice Awards** and for its “TravelCast” lists of emerging destinations.
- Estimated the **monetary value of inbound links** to enable TripAdvisor’s Partnerships team to prioritize targets.
- Conducted numerous experiments to improve search engine traffic to the TripAdvisor website. For experiments where revenue was also tracked, **company profit was increased by approximately \$6,600,000 per year**.
- Was directly involved, for many of the experiments, in **every phase of the experiment process**, namely: Idea generation, design (for example, A/B test), software development (including modifications to the website), quality assurance, monitoring, statistical analysis, reporting of results, and recommendations for action.
- Designed and partially implemented a **first-of-its-kind internal link optimization algorithm**, built to grow site revenue, with the auxiliary benefit of improving search engine visibility to the site’s large number of middle-level pages. Tests demonstrated that pages receiving these internal links rose significantly in Google search results.
- Provided consulting to the Search Engine Marketing (SEM) and Content Integrity teams at TripAdvisor, including the design of the algorithm for **automatically maintaining bid prices** for millions of SEM campaign keywords.
- Designed a **Bayesian-based selection engine** for online advertisements, which chose, from multiple hotel vendors competing for display on a given webpage, that subset of vendors it believed would maximize revenue.

Search engine optimization (SEO) business owner/product owner

- Joined TripAdvisor as the first person dedicated to SEO, and remained a key figure in SEO as an SEO team grew. TripAdvisor was **respected as a leader in SEO** by its parent company, Expedia, and by the online travel industry.
- Identified, developed, and applied SEO best practices to content, links, and data feeds, for both new and already-existing pages on the site. Monitored site changes made by other teams to ensure compliance with SEO practices.
- Familiarized new SEO team members with SEO practices. Evangelized SEO to other teams at TripAdvisor.
- Shared SEO experiences with counterparts in the family of companies owned by Expedia, Inc., which then owned TripAdvisor. Provided in-depth SEO consulting for Hotwire, Venere, and Expedia-branded websites.
- Provided SEO consulting at various levels of engagement for websites acquired (wholly or partly) by TripAdvisor, including: Cruise Critic, FlipKey, Holiday Watchdog, OneTime, SeatGuru, Smarter Travel Media (including bookingbuddy.com and smartertravel.com), Travel Library, TravelPod, and Virtual Tourist.
- Played a leadership role in the launch, in late 2005, of TripAdvisor’s international points of sale, which grew to account for **more than half of the company’s revenue** by 2011.

2002–2004: Post-doctoral Fellow and Adjunct Assistant Professor, Rochester Institute of Technology (RIT).

- Co-developed RITMOS, the first multi-object spectrometer that successfully incorporated a micromirror array for target selection. Contributions included development of performance specifications, the instrument device driver, and graphical user interface; **testing; analysis of the test results**; and dissemination to the scientific community.
- Taught “**Programming for Imaging Science II**,” which covered the IDL data analysis environment and language at an intermediate level for third-year imaging science undergraduates.
- Co-wrote and conducted the necessary advance research for four government agency grant proposals.

2000–2001: Research Assistant, RIT.

- Built RYTSI, the RIT–Yale Tip-tilt Speckle Imager, which was used for speckle interferometry observations regularly starting in 2001. Contributions included the overall, mechanical, and electrical design of the instrument, its assembly, and driver and GUI software development.

1994–2000: Research Assistant and Teaching Assistant, Yale University.

- Conducted research for the **Ph.D. dissertation Binary Star Speckle Photometry and Astrophysical Implications**. **Measured** hundreds of binary star magnitudes. Investigated their measurement errors, in part via **Monte Carlo simulations**. Fitted a library of real stellar spectra to these magnitudes and their errors, in combination with data from the literature, by use of a **statistically rigorous, strongly nonlinear χ^2 minimization** in five dimensions. Inferred stellar physical properties from the data fits, with potentially much higher precision than previous studies.

- Upgraded the Double Astrograph at El Leoncito, Argentina, by installing two science CCD cameras, focus monitors utilizing two additional CCDs, temperature sensors, a weather station, and a network of Linux and Windows control computers. Wrote driver software for the new instrumentation, including a Linux kernel module.
- Helped to develop a computer **simulation** of blazar TeV spectrum attenuation by the cosmic infrared background.
- Examined X-ray observations of the globular cluster M22.
- Gained roughly 1,250 hours of experience as a teaching assistant for seven undergraduate classes.

1990, 1992–1993: Undergraduate Research Assistant, The Pennsylvania State University.

- Constructed a mesh of model X-ray spectra, varying six physical parameters to a neutron star atmosphere simulation by George Pavlov et al., and developed **software that fit this nonlinear mesh** to X-ray pulsar spectra.
- Rewrote control software and built a mirror cover for the 62" telescope at Black Moshannon Observatory.

Bibliography

- **More than twenty scientific publications**, including two theses and several refereed journal articles
- Non-scientific works include computer software, graphic arts, literature, and musical compositions

Academic Honors and Awards

- Garfinkel Prize Fellowship, Yale, 1993
- Phi Beta Kappa, Penn State, 1993
- Braddock Scholarship, Penn State, 1989–1993 (four year, full scholarship)
- University Scholar, Penn State, 1989–1993

Organizations

- Sigma Xi, the Scientific Research Society, 1993–present (Full Life Member)
- Penn State Astronomy Club, 1989–1993 (President 1991–1992)