

# AI for Small Businesses and Consumers: Applications and Innovations

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## ABSTRACT

Small businesses are the lifeblood of the U.S. economy, representing an astounding 99.9 percent of all businesses, creating two-thirds of net new jobs, and accounting for 44 percent of economic activity. Yet, 50 percent of small businesses go out of business in the first 5 years.

What's behind this dismal statistic? Among the top contributing factors is cash flow management. Owners who cannot efficiently manage the inflow and outflow of cash are almost certain to fail. And, those who can are more likely to break through the statistical 5-year barrier to build thriving businesses.

In this talk, we'll describe novel applications of artificial intelligence and large-scale machine learning aimed at addressing the problem of forecasting cash flow for small businesses. These are sparse, high-dimensional correlated time series. We'll present new results on forecasting this type of time series, using scalable Gaussian Processes with kernels formed through the use of deep learning. These methods yield highly accurate predictions but also include a principled approach for generating confidence intervals.

## BIOGRAPHY

Ashok Srivastava, Ph.D., is Senior Vice President and Chief Data Officer at Intuit. He is responsible for setting the vision and direction for artificial intelligence, machine learning, and data across the enterprise, to help power prosperity across the world.

Prior to Intuit, Ashok was with Verizon where he was VP of Big Data and Artificial Intelligence Systems and Chief Data Scientist. His global team focused on building new revenue-generating products and services powered by big data and artificial intelligence.

Prior to Verizon, Ashok served as an advisor for Trident Capital and MyBuys in the areas of big data analytics and strategic investments, and at NASA Ames Research Center where he was a principal scientist for data sciences, and led many research & development efforts in machine learning and data mining for NASA Enterprises. He has also been on the advisory board of several startups.

As a thought leader in the area of big data analytics, social media optimization, machine learning and data mining, Ashok has given numerous presentations, written 100+ research articles and published four books on these and related subjects. He has 30+ patents awarded/in-process and has won numerous awards, including the IEEE Computer Society Technical Achievement Award for "pioneering contributions to intelligent information systems," the NASA Exceptional Achievement Medal for contributions to state-of-the-art data mining and analysis, several NASA Group Achievement Awards and the Department of Education Merit Fellowship.

Ashok is currently an adjunct professor at Stanford University in the Electrical Engineering Department. He was the Editor-in-Chief of the *AIAA Journal of Aerospace Information Systems* and a Fellow of the IEEE, the American Association for the Advancement of Science (AAAS), and the American Institute of Aeronautics and Astronautics (AIAA). Ashok earned a Ph.D., M.S. and B.S. in Electrical Engineering from the University of Colorado at Boulder.



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KDD '19, August 4–8, 2019, Anchorage, AK, USA.

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ACM ISBN 978-1-4503-6201-6/19/08.

DOI: <https://doi.org/10.1145/3292500.3340398>