



Exponent®
Engineering & Scientific Consulting

Alok Srivastava, Ph.D.

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Professional Profile

Dr. Srivastava specializes in Mechanical Engineering has a deep knowledge of areas including dynamics and control systems, numerical modeling and simulation, and mechanics of materials.

Dr. Srivastava has a unique background of solving problems in health and biomedical research. Prior to joining Exponent, he worked at Caltech on the development of an ultra-sensitive device to detect proteins from a drop of blood. In an earlier role at Mayo Clinic, he applied machine learning techniques to gene expression analysis of bone cancer. As a graduate student, Dr. Srivastava worked on developing robots to automate sample handling for DNA sequencing. Working at MIT and with engineers at the University of Cambridge, he developed a highly accurate simulation and understanding of DNA transport in microdevice based DNA sequencing. Dr. Srivastava has also performed technical due diligence studies and business analysis for biotechnology startups.

At Exponent, Dr. Srivastava is using his core Mechanical Engineering expertise to serve clients that need help with challenging cases involving HVAC, Mechanical Failures, Stress Analysis, Dynamics, and Control Systems. He continues to develop his capabilities to serve clients in the areas of biomedical devices and renewable energy.

Dr. Srivastava was a Graduate Research Assistant at MIT's Computer Aided Design Laboratory in the Department of Mechanical Engineering and at the BioMEMs Laboratory of the Whitehead Institute for Biomedical Research. He was the Teaching Assistant for three core undergraduate Mechanical Engineering classes at MIT, namely a) Statics, b) Dynamics, and c) Control Systems. He enjoys explaining advanced engineering concepts in a way that non-experts can understand.

Dr. Srivastava started his professional career at Tata Steel where he conducted failure investigations and supported scheduled Steel Plant maintenance.

Dr. Srivastava has deep experience in scientific programming, numerical modeling and simulation using Matlab and Octave, as well as experience with finite difference and finite element methods for dynamic simulations. He is proficient in Perl, Python and SQL. He has performed design, assembly, programming and interfacing of robotic systems, and is skilled in mechanical design and CAD systems such as SolidWorks.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Massachusetts Institute of Technology (MIT), 2002

B.S., Technology, Mechanical Engineering, Indian Institute of Technology, New Delhi, 1991

Academic Appointments

Visiting Scholar, Electricity Utilization Group, Department of Electrical Engineering, University of Cambridge, UK, Fall 2001

Visitor, Department of Chemistry, California Institute of Technology, Pasadena, CA, 2007-2008

Prior Experience

Postdoctoral Fellow, Institute for Systems Biology, Seattle, WA 2004-2008

Postdoctoral Scholar, Mayo Clinic, Rochester, MN 2002-2004

Senior Officer, Tata Steel, Jamshedpur, India 1991-1992

Publications

Fan R, Vermesh O, Srivastava A, Yen BKH, Qin L, Ahmad H, Kwong GA, Liu CC, Gould J, Hood LE, Heath JR. Integrated barcode chips for rapid, multiplexed analysis of proteins in microliter quantities of blood. *Nature Biotechnology* 2008; 26(12):1373-8.

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Mandal D, Srivastava A, Mahlum E, Desai D, Maran A, Yaszemski M, Jalal SM, Gitelis S, Berton F, Damron T, Irwin R, O'Connor M, Schwartz H, Bolander ME, Sarkar G. Severe suppression of Frzb/sFRP3 transcription in osteogenic sarcoma. *Gene* 2007; 386(1-2):131-8.

Srivastava A, Fuchs B, Zhang K, Ruan M, Halder C, Mahlum E, Weber K, Bolander ME, Sarkar G. High WT1 expression is associated with very poor survival of patients with osteogenic sarcoma metastasis. *Clinical Cancer Research* 2006; 12(14 Pt 1):4237-43.

Srivastava A, Rock C, Zhang K, Ruan M, Bolander ME, Sarkar G. Expression of a novel alternatively spliced UCP-2 transcript in osteogenic sarcoma. *Journal of Orthopaedic Science* 2006; 11(1):51-7.

El-Difrawy SA, Srivastava A, Gismondi EA, McKenna BK, Ehrlich DJ. Numerical model for DNA loading in microdevices: Stacking and autogating effects. *Electrophoresis* 2006; 27(19):3779-87.

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Peer Reviews

Electrophoresis. 2006-2007.