



Ami.Gates@georgetown.edu
<http://drgates.georgetown.domains/>
www.MathAndStatistics.com

YouTube Channel: ProfessorAmiGates
Georgetown University, Washington DC, 20007
352-281-9922

AMI M. GATES, Ph.D.

**Director and Professor,
Data Science and Analytics
Georgetown University**

EDUCATION

Doctor of Philosophy Computer Engineering University of Florida, Dec.2008

Dissertation Publication: State of the Art Protein Secondary Structure Prediction Using a Novel Two-Stage Alignment and Machine Learning Method **Focus:** Machine learning, data mining, big data, high dimensional data, pattern classification, support vector machines, bioinformatics, biological data analysis and prediction, data analytics. <http://ufdc.ufl.edu/UFE0023862/00001>

Service & Awards:

University of Florida Presidential Recognition Award
University of Florida Graduate Fellow and TA
Computer Science Graduate Student Organization President
Industrial Advisory Board Graduate Representative
Woman in Engineering ACM Speaker
Children's Cancer Volunteer

• **Additional Graduate Statistics**

- STA 6166 Statistical Methods I
- STA 6167 Statistical Methods II
- STA 6329 Statistics and Linear Algebra
- MAA 6236 Mathematical Analysis for Statistics
- STA 6326 Theoretical Statistics I
- MAT689 Probability and Statistics
- CAP 6610 Machine Learning
- BIST 510 Adv. Probability Theory
- BIST 515 R and SAS Programming for Data Analysis

• **Additional Graduate Science**

- BCH 6206 Advanced Metabolism (including protein dynamics)
- BCH 6415 Advanced Molecular and Cellular Biology
- BCH 6156 Research Methods in Biochemistry
- BCH 6296 Advanced Topics in Metabolic Control
- CIS6930 Computational Neuroscience
- BCH 6936 Biochemistry Seminar
- EME 6405 Educational Technology in Teaching

Master of Science in Computer Information Science and Engineering. University of Florida, 2002

Master of Science in Mathematics and Education. Nova Southeastern University, 1997

Thesis: Teacher-Student Communication-Based Pedagogy on Raising Community College Students' Preparatory Mathematics Scores. **Focus:** Adaptive Learning Methods, Experiential Learning, Pedagogy, Analytics. **Award:** Nova SE University Alumni Honors Award for Outstanding Educational Intervention

Bachelor of Arts Degree in Mathematics. Florida Atlantic University, 1991

- A. Gates**, "State of the Art Protein Secondary Structure Prediction Using a Novel Two-Stage Alignment and Machine Learning Method" *Dissertation Publication: University of Florida Library*, 2008
- A. Gates**, "The Future of Learning and Teaching Math and Statistics: A Video is Worth 1000 Pages", *Center of Teaching and Learning Educational Conference*, 2012
- A. Gates** and T. Kelley, "Step Ahead with Pre-Term Proactive Outreach: Getting Learners Ready for Day 1", *Center of Teaching and Learning Educational Conference*, 2012
- A. Gates** and M. Lis, "Preterm Outreach and the Instructor Live Binder (ILB) Initiative" *Virtual General Education Conference Innovative Strategies*, 2013
- J. Bolton, P. Gader, and **A. Gates**, "Embedding Multiple Instances: Applications to Hyperspectral Image Analysis", *Proceedings of the IEEE Workshop on Hyperspectral Image Signal Processing: Evolution in Remote Sensing*, Gainesville, 2013
- P. Hohensee, L. Johnson, **A. Gates**, "Leveraging Google Apps to Enhance Online Learning in Mathematics", *AMAYTC: American Mathematical Association of Two Year Colleges*, 2014
- A. Gates**, "Methods of Statistical Analysis Using Google Form Data and Excel", *Center for Teaching and Learning Conference*, Kaplan University, 2014
- A. Gates**, R. Lockwood, "Methods and Perceptions of Grading: A Balanced Approach", *Kaplan General Education Conference*, 2014
- J. Bolton, **A. Gates**, "Utilizing Google+ and Google Sites for Improved Course Leadership, Mentorship, and Collaboration", *Kaplan Virtual Education Conference*, 2014
- A. Gates**, "eBook: (MOOT) Video and Visual Textbook for Introduction to Statistics", <http://www.mathandstatistics.com/introduction-to-statistics-video-moot>, 2014
- Invited Speaker Series:** Kaplan University, "The Development and Utilization of Google Communities in Faculty Support and Professional Development", **A. Gates**, 2015
- Conference Session Host:** Kaplan General Education Conference 2015, 2016
- Gates, A. & Bolton, J.**, The Effectiveness of Twitter as an Adjunctive Pedagogical Tool for Online Statistics Education: An Empirical Study. In *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 2834-2840). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE/SITE) 2015.
- A. Gates**, Developing and Sharing Asynchronous, Personalized, and Interactive Learning Solutions: An E-Learning Workshop for Interactive Google, *AACE Association for Advancement in Computing, eLearn World Conference, Washington, DC* 2016
- A. Gates**, "Statistics Education: Directed Personalized Learning with Video-Supported Interactive Google Forms", *Kaplan General Education Conference*, 2016
- A. Gates**, "Scholarship Methods: From Statistical Analysis to Time Management", *Kaplan Virtual Education Conference*, 2016
- A. Gates**, "Programming in R and Exploratory Data Analysis", *CAPWIC: 2017 ACM Capital Region Celebration of Women in Computing Conference, Workshop*, 2017
- A. Gates**, "Research Case Studies: Exploratory Data Analysis Using Excel", *Kaplan General Education Conference*, 2017
- A. Gates**, "Association Rule Mining With Tweets: Thinking Outside the Basket", *The 2018 Washington DC R Conference*, 2018

Books:

- 1) Introduction to Programming and Analytics with Python (in progress)
- 2) World of Data (in progress)
- 3) Introduction to Statistics with Excel (MOOT) (<http://www.mathandstatistics.com/introduction-to-statistics-video-moot>)

A comment from student taking my Data Analytics class:

DrG - *“It is known that Teacher–Student interactions play an important role in human learning. An old Japanese proverb says **“Better than thousand days of diligent study is one day with a great teacher.”**”*

That Japanese proverb clearly explains my experience in your class.

Thank you so much Professor!

List of Courses developed and taught over the last 15 years:

Data Science and Analytics (from data collection, APIs, data cleaning, data prep, data analysis - supervised and unsupervised – story telling, narratives) (R, Python3)	Introduction to CISE/IT/Programming (Python3/Anaconda/Spyder/Jupyter, C++, JavaScript, HTML, CSS)
Data Visualization (R/ggplot2/Plotly, layers, aesthetics, Python3/Plotly/matplotlib/Bokeh, Tableau, Shiny/R, Leaflet/R, Tableau, NetworkD3, vis for supervised and unsupervised methods, story boarding, dash boarding), 3D and rotatable Vis	Machine Learning (with R and Python3) Text Mining (R and Python3) Web Development End-to-end, client-server, stacked, HTML/DOM/CSS, JavaScript, interactive vis
R and Python3 for Data Analytics (R, Python 3, Unix/Linux)	Information Technology Systems Development and Engineering
Data Mining	Formal Languages and Automata Theory
Mathematical Probability & Statistics (R, SAS)	Operating Systems (UNIX, DOS)
Intro to Statistics (Excel)	Number Theory (Matlab)
Graduate Applied Statistics (SPSS)	Database (many)
Applied Statistics for Health Sciences and Social Sciences (graduate and undergraduate, SPSS)	Discrete Math
Workshops: Technical writing, communication, and presentation skills, interactive vis on the web, Google Apps, Sites, and Docs,	Analysis of Algorithms
Algebra, Trigonometry, Calc, DE, and Adv Calc, Linear Alg	Information Technology with Python 3 (and web development)
Additional Tools covered: Tableau, Plotly, Shiny, JSON, XML, SQL, Bokeh, HTML/JS/CSS	Software Engineering

Recent Employment

Director and Associate Professor of Teaching, Data Analytics and Computer Science: Georgetown University, Washington DC: 2015- <https://analytics.georgetown.edu/>

Instruction and Development

- Introduction to **Information Technology** and Computer Science (COSC 010)
 - Introduction to programming with Python3/Anaconda/Spyder
 - Introduction to Internet technologies and web development (HTML/JS/CSS)
 - Introduction to computer organization, file systems, memory management
 - Introduction to data science
 - A history of computers and computing
 - Computer security, privacy, and ethics
 - Site: <https://sites.google.com/site/drgatescsc010/syllabus>
- Graduate **Data Analytics and Data Science** (ANLY 501)
 - Data analytics and data science
 - Data Science Life Cycle
 - Python 3 (with Anaconda/Spyder)
 - Data wrangling, cleaning, and preprocessing
 - Data normalization, transformation
 - Machine learning methods and techniques: SVM, NN
 - Bayesian Analysis/ Naïve Bayes
 - Clustering Methods (k-means, hierarchical, density/DBSCAN - and with Python)
 - Graph/network theory, methods, and measures
 - API utilization
 - Text mining, association rules, topic modeling
 - Data Mining
 - Decision Trees, Random Forest
 - Storytelling and interactive visualizations with Bokeh/Plotly/Tableau
 - Site: <https://sites.google.com/site/drgatesanly501/home>
- Graduate **Data Visualization** (ANLY 503)
 - Grammar of Graphics, with ggplot2 and R
 - Visualization in Python 3, matplotlib, Bokeh, plotly
 - Interactive visualization, D3, leaflet/R, Shiny/R, plotly
 - Visualization Methods and Beautification with Tableau
 - Text and Twitter mining and visualization
 - Network visualization and graph theory, NetworkD3
 - Geo and temporal visualization, leaflet
 - Facial recognition: Data reduction (PCA, ICA, LDA), Eigenfaces (Python)
 - Site: <https://sites.google.com/site/drgatesanly503/syllabus>
- Graduate Special Topics for the **Programming Preparation for Data Analytics** (Summer course)
 - Programming in R and R for data science and analytics
 - Programming in Python 3 (IDE: Anaconda/Spyder)
 - Data Science and ML Packages
 - Visualization: Python, R, plotly, and Tableau
 - Command Line Interaction

Georgetown University Administrative Activities

- All aspects of Admissions
- Student Employment, Career Fair Organization, Internship Management
- Student Advising

- Industry Networking and Relations including Seminars and Workshops
- Outreach and Program Growth
- Budgeting and Financials
- Hiring and Faculty Management
- Advisory Boards and Steering Committees
- Curriculum and Scheduling
- Course and Curriculum Development
- Web Presence

Visiting Professor of **Syracuse University, School of Information Studies (Online)**, Applied Data Science

Instruction

- Graduate Data Mining
- Graduate Data Analytics
- Graduate Text Mining

Visiting Research Scientist with SMART Group: **Johns Hopkins Bloomberg School of Public Health: 2015 – current**

Research Projects

Project 1: The utilization of independent component analysis methodologies, combined with the exploitation of information gained from potential brain homotopy and symmetries, in the design and development of a novel gICA method (H-gICA). This project focused on the development of a new group ICA approach, Homotopic Group ICA (H-gICA), for use on blind source separation of resting state functional magnetic resonance imaging (fMRI) data. Brain functional homotopy is the high degree of synchrony in spontaneous activity which exists between geometrically corresponding inter-hemispheric regions. The project utilized information intrinsic to brain homotopy to advance network estimates and discover, as well as computational efficiency.

RE: <http://www.smart-stats.org/>

Manuscript: *In Progress* Juemin Yang, Ani Eloyan, **Ami Gates**, Anita Barber, Mary Beth Nebel, Stewart Mostofsky, James Pekar, Ciprian Crainiceanu, Brian Caffo. “Homotopic Group ICA for Multi-Subject Brain Imaging Data”

Visiting Professor of Mathematics and Statistics: **Purdue University Global Online: (2011- 2018)**

Instruction

- Graduate Applied Statistics for Psychology and Social Science Research (SPSS)
- Undergraduate Statistics (Excel)

Course Development

- Graduate Applied Statistics for Psychology and Social Science Research with SPSS (eCollege) (SME)
- Statistics with Excel (eCollege) (SME)
- Statistics for Health Sciences

Leadership & Service

- Course Lead: Graduate and Undergraduate Statistics
- New Faculty Mentor
- Publication and Presentation Committee Leader

Innovation and Research

I engaged in on-going, but proprietary research and development involving novel and effective methods and models for virtual and technology-based learning environments, adjunctive technology-based learning tools, adaptive and personalized learning methods, modularization and self-directed learning, as well as faculty and student support and retention methods.

Faculty Development and Support

- Development and management of the Publication Group, a support and team-building g+ Community to facilitate and promote publication and presentation partnerships and activity.
- Development and facilitation of the Statistics Community, a support and team-building g+ Community to support statistics instruction, advanced pedagogical methods, and collaboration among colleagues.

Course Consultant and Developer: **University of Florida:** (2012)

Development of CGS 2531: Problem Solving Using Computer Software

- Interviews and incorporation of all stakeholder requirements/concerns
- Course architecture, curriculum design and development, content
- Acquisition and incorporation of technologies: MyItLab, Sakai, Canvas, LMS
- Clarification and reservation of facilities, labs, and student support services

Instructor: **University of Florida:** (2003 – 2008)

- Discrete Math
- Mathematical Statistics and Probability
- Operating Systems
- Intro to IT/CISE

Visiting Professor: **Colorado Technical University:** (2005 – 2017)

- Discrete Math
- Statistics
- Graduate Information Technology System Development I, II

Visiting Professor: **Florida Technical University:** (2005 – 2016)

Faculty Mentor

Instruction and Development

- Statistics
- Computer Programming

Senior Full-time Lecturer Computer Science Dept.: **Florida Atlantic University:** (2000-2002)

Instruction and Development

- Analysis of Algorithms
- Formal Languages and Computation Theory
- Database (Pro*C, SQL, Oracle 9i)
- Internet Programming (XHTML/DHTML,CSS, XML, XSL, JavaScript, Perl/CGI)

Mathematics and Statistics Education Full-time Lecturer: **Nova Southeastern University:** (1997-1999)

Instruction and Development

NOTE: The focus of the following courses included both the topics and how to teach the topics to students in various settings and with the use of technologies.

- Statistics
- Discrete Mathematics

- Analysis of Calculus
- History of Math
- Linear Algebra
- Number Theory

Welfare to Work Program **Santa Fe College** Gainesville: 1994 – 1999

- **Award: Teacher Recognition Award-Mathematics Santa Fe Community College**
- Highest student success rate
- Highest overall student graduate rate

INDUSTRY

Languages and Apps:

Python 3 / Anaconda / Spyder	Debut/YouTube: Video Production and Screencasting (as well as Jing)
R / RStudio	Abobe for Synchronous remote learning
C/C++/some C#/.net	Development in LMS: BlackBoard, eCollege, WebCT, Moodle, Sakai, Canvas, D2L, CNDLS
SAS, SPSS	Visual Basic
Perl	Web Dev: JavaScript, HTML/DHTML/CSS/GS
Bokeh, plotly, matplotlib, ggplot2/R, Tableau, Python, GoogleVis, seaborn	Google Apps/APIs
SQL	Matlab

Project Manager: Acquinity Interactive, Inc. 2012 Contract

- C#/.Net, SQL,Python/ IronPython
- Technical training
- Technical writing
- Technical, code, and framework documentation
- Instructional video production

Project Manager: Mathematician, Researcher, IT, Web Development and Software Consultant: Mitsubishi Power Systems: 2001 Contract

- Database analysis and development (Oracle 9i, PL/SQL, XML)
 - Performance Tuning on 35 million inserts per day into Oracle database. Fine-tuned SQL statements and processing to allow fast retrieval of data without affecting the insertion and deletion speed.
 - Real-time data flow analysis of database with 24/7/365 uptime. Performed statistical analysis of every critical point of data flow.
- Numerical and statistical analysis (prediction analysis, pattern analysis, assessment)
 - Created graphical Java/Swing applets integrated with PL/SQL to dynamically generate radar charts, 3D bar graphs, line graphs, scatter plots based on real-time streaming data from Oracle Database.

- Web and graphical development (Perl, Java, JavaScript, Flash, C++)
 - Development of Mitsubishi's dynamic website using Oracle Portal, JavaScript, DHTML menus, Oracle Portal SSO, Java graphing applets.
 - Developed Mitsubishi Power System's commercial website using PL/SQL, DHTML, XML, Java servlets, JSP.
- Management and Integration
 - Multiple departmental specification integration
 - International cooperation and coordination
 - Team management

Software Engineer and Web Developer: Citrix Systems (2000 Contract)

- Global Engineering web site design and development.
 - Developed for the design of internal / external company web pages, including graphics, animation and functionality.
 - Developed web page infrastructure and applications related to pages with more advanced graphics and features.
 - Maintenance of web server and site technical performance.
 - Developed, accessed and communicated web site usage and security policies and standards
 - Perl, R, Python, CGI, DHTML/CSS, JavaScript, ASP, XML/XSL. Citrix MetaFrame 2.0, Nfuse 1.8, MS Windows NT Server 3.51& 4.0, MS SQL, MS Visual Basic, ASP, MS IIS, Active-x, ADO, RDBMS design

TOOLS, SOFTWARE, AND APPLICATIONS

Languages and Tools: Python3/Anaconda, R/RStudio, Matlab, SPSS, SAS, Excel, C, C++, C#/.Net, Java, Perl, JavaScript, HTML/DHTML/DOM/SVG/CSS, D3, ProC for Oracle, Visual Basic, SQL, XML/XSL, JSON, Google

Specific Data Visualizations Apps and Tools: Python, R, Plotly, Bokeh, Tableau, R/Shiny, R/leaflet, R/NetworkD3, D3, ggplot, HTML Widgets, 3D, video production

Systems: UNIX, Linux, Windows

Educational Apps and LMS: 2U, BrightSpace, BlackBoard, MyPath, CR3, eCollege, WebCT, Moodle, Pearson MyMathLab/MyStatLab/MyItLab, ALEKS, Debut/YouTube, Jing/Screencast, **Sakai**, MS Office, **Canvas**, Adobe Connect, Breeze, Google Apps and Docs, **Zoom**.

AWARDS AND VOLUNTEER

- 2018 Teacher of the Year Award, Florida Technical University, College of Engineering and Science, Award presented by: Dr. Phil Bernhard, Director, School of Computing, FIT
- 2017 Dedicated Faculty Award (to student engagement and success) West Coast University, CA
- 2016 General Education Promotion and Information Video Award Kaplan University
- 2015 Kaplan Scholarship Award Nominee
- 2015 Kaplan Faculty Spotlight for Excellence
- Outstanding Full Time Faculty Member for the School of General Education Kaplan 2014
- 2012-2013 Educator of the Year Finalist in the category of Instruction (1 of 613)
- New Teacher of the Year Award Kaplan 2012
- Nova Southeastern University Alumni Honors Award
- Teacher Recognition Award-Mathematics Santa Fe Community College

- Colorado Technical University "The Student Comes First" Award
- Colorado Technical University "Special Achievement Award"
- Colorado Technical University "Faculty Service Award"
- Westwood College Distinguished Faculty Award
- Westwood Faculty of the Year Award
- Nova Southeastern University Alumni Honors Award for Outstanding Educational Intervention
- University of Florida Presidential Recognition Award
- Outstanding Student in Mathematics Award
- Outstanding Student in Science Award

VOLUNTEER

- Welfare to Work Program
- Children's Cancer Volunteer
- Special Instruction for Visually Impaired
- **YouTube Channel:** ProfessorAmiGates
- Sites: www.MathAndStatistics.com, drgates@georgetown.domains
- Free open eBook: <http://www.mathandstatistics.com/introduction-to-statistics-video-moot>
- Colorado Technical University Mentorship Program

REFERENCES

- Dr. Brian Caffo, Professor of Biostatistics, Johns Hopkins Bloomberg School of Public Health, SMART Group, bcaffo@gmail.com, bcaffoweb@jhu.edu, www.bcaffo.com, www.smart-stats.org
- Dr. Nathan Vanderkraats, Senior Manager Data Analysis, Monsanto, ndvk1980@yahoo.com, (636) 208-8012
- Dr. Mahendran Velauthapillai, Professor of Computer Science, Georgetown University, Washington, DC, , mahe@cs.georgetown.edu, 202-687-5936
- Dr. Paul Bohman, Director of Training, Deque Systems, Washington DC, Paul.Bohman@deque.com, 703-930-8500
- Dr. Arunava Banerjee, Professor of Computer Science, University of Florida, arunava@cise.ufl.edu, (352) 505-1556
- Dr. Borko Fuhrt, Professor and Director of the NSF Industry/University Cooperative Research Center, Florida Atlantic University, bfurht@fau.edu, (561) 297 – 3180

CERTIFICATES AND CONTINUING EDUCATION TRAINING

- Georgetown University Canvas Training 2018
- Georgetown University CNDLS Training 2018 <https://cndls.georgetown.edu/>
- Georgetown University Zoom Training 2018
- University of Syracuse Zoom and online active teaching Training 2018
- University of Syracuse Adobe Training 2017
- University of Syracuse 2-month online teaching training program (synchronous and asynchronous) 2017
- R Programming Coursera Certificate with Distinction 2015
- CTL 026: Adaptive Learning 2014
- Kaplan Training: Diversity 2014
- CTL025 Measuring Student Performance 2014

- CTL 028 Learning Management Systems and Professional Competency 2014
- ADJ221 Rubric Utilization Workshop 2014
- Kaplan Training: Motivating by Appreciation 2014
- ADJ220 Fostering Effective Online Student Discussion Areas 2013
- ADJ130 Utilization of Online Learning Resources 2013
- Using Adobe for Education 2013
- ETS 160 Approaches to Teaching and Learning and Designing Online Classes 2013
- CTL 018 LOM Implementation Training 2013
- CTL 019 Utilization of Digital Textbooks Online 2013
- Kaplan Training: Teaching and Learning Online: Workshop for Designing and Teaching Online Classes 2012
- Kaplan Training: Creating Multimedia Objects for Online Learning 2012
- Kaplan Training: Constructivist Learning in Higher Education: Decreasing Students' Cognitive Conflict While Increasing Learner Reflection and Peer Interaction 2012
- ED 102 and RT 101 Student Retention Methods in Online Learning 2011
- PD 101, 102, 103: Teaching Online 2011
- ALEKS Training 2011

MEMBERSHIPS AND ASSOCIATIONS

- Advisory Board Member for The Data Community DC: <http://www.datacommunitydc.org/>
- American Statistical Association (ASA)
- Institute of Electrical and Electronic Engineers (IEEE)
- Association for Computing Machinery (ACM)
- ACM Capital Region Celebration of Women in Computing Conference (CAPWIC)
- Association for the Advancement of Computing in Education (AACE)