WENHAN GAO

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COMPUTING, PROGRAMMING, DISCRETE MATH, AND INFO-MANAGEMENT

AMS 595, Fundamentals of Computing Grade: A, 4.0/4.0

- Graduate Course taken as an undergrad student. Topics including: scripting, data structures, algorithms, scientific computing, performance optimization, software engineering, version control(git), program development tools.
- Projects in Python, Matlab, and C++.

MAT 331, Computer-Assisted Math Problem Solving Grade: A, 4.0/4.0

- **Projects written in Python**: Cryptograph(Caesar, Vigenere, RSA), Apollonian packing(Fractal), Coloring Julia/Mandelbrot Set and Newton's Method. The course also covers Monte-Carlo Methods, Numerical ODE, Numerical Differentiation and Integration, Tower of Hanoi(Recursion).

EST 320, Communication Tech Systems Grade: A, 4.0/4.0

- Textbook: **Principles of Computer Networks and Communication**, D. Barry, S. Morris

ET-704, Networking Fundamentals I Grade: A, 4.0/4.0

- Textbook: **Network+ Guide to Networks**

EST 305, Applications Software for Information Management Grade: A, 4.0/4.0

- Textbook: **VBA for Modelers: Developing Decision Support Systems with Microsoft Excel**, 4th edition, S. Christian Albright; Duxbury
- Textbook: **Management Science: The Art of Modeling with Spreadsheets**, 4th ed, PowelL and Baker
- **Project written in Visual Basic**: Projecting the Effectiveness of Covid Vaccines with User Interfaces

ET-570, Creating Smartphone Applications Grade: A, 4.0/4.0

- **Created a web-based mobile game with JavaScript**(unfortunately, does not work on iOS).

MA-471 Introduction to Discrete Structures Grade: A, 4.0/4.0

- Textbook: **Discrete Mathematics and Its Applications**, 6th Ed., by Kenneth Rosen

MAT 312, Applied Algebra Grade: A, 4.0/4.0

- Textbook: **Numbers, Groups and Codes**, 2nd Ed., by Humphreys and Prest

AMS 303, Graph Theory Grade: A, 4.0/4.0

- Textbook: **Introduction to Graph Theory**, 5th Ed., by R. Wilson
- Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.
- **Final Project on Cryptography**, wrote a Python program to assist in visualizing frequency patterns.

AMS 301, Finite Mathematical Structures Grade: A, 4.0/4.0

- Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.

PROGRAMMING CERTIFICATES/ONLINE COURSES

Machine Learning Coursera

· Linear Regression, Logistic Regression, Regularization, Neural Networks, Machine Learning System Design, Support Vector Machines, Unsupervised Learning(K-means clustering), Dimensionality Reduction(Principal Component Analysis), Anomaly Detection, Recommender Systems, Online Learning

Deep Learning Specialization Coursera

· Five Courses in the Deep Learning Specialization. Learn to build neural network architectures such as Convolutional Neural Networks, Recurrent Neural Networks, etc.. and to make NNs better with strategies such as Dropout, BatchNorm, and Xavier/He initialization. Implemented some industry applications using Python and TensorFlow.

Getting Started with AWS Machine Learning Coursera

· Key problems that Machine Learning can address and ultimately help solve.

Python Specialization Coursera

· Five Courses in the Python Specialization offered by University of Michigan. Fundamental programming concepts including data structures, networked application program interfaces, and databases.

Mastering Programming with MATLAB Coursera

· Advanced concepts related to functions such as recursion and function handles.
· Learn basics of Object Oriented Programming and how to write efficient programs.
· Learn to write Live Scripts and create GUIs.

Bayesian Statistics: From Concept to Data Analysis Coursera

· This course introduces the Bayesian approach to statistics, starting with the concept of probability and moving to the analysis of data.
· Key differences between Bayesian and Frequentist approaches

PROOF-BASED MATH COURSES

MAT 310, Linear Algebra Grade: A, 4.0/4.0

· Textbook: **Linear Algebra Done Right**, 3rd Ed., by Sheldon Axler

MAT 342, Applied Complex Analysis Grade: A, 4.0/4.0

· Textbook: **Complex Variables and Applications**, 9th Ed.; Brown and Churchill

MAT 320, Introduction to Analysis Grade: A, 4.0/4.0

· Textbook: **Introduction to Real Analysis**, 4th Ed., by Bartle and Sherbert

MAT 312, Applied Algebra Grade: A, 4.0/4.0

· Textbook: **Numbers, Groups and Codes**, 2nd Ed., by Humphreys and Prest

MAT 360, Geometric Structures Grade: A, 4.0/4.0

· Textbook: **Euclidean and Non-Euclidean Geometries Development and History**, 4th Ed., by Marvin J. Greenberg

MAT 200, Logic, Language and Proof Grade: A, 4.0/4.0

· Textbook: **An Introduction to Mathematical Reasoning: Numbers, Sets and Functions**, 1st Ed., by Eccles, Peter J.

MA-471 Introduction to Discrete Structures Grade: A, 4.0/4.0

· Textbook: **Discrete Mathematics and Its Applications**, 6th Ed., by Kenneth Rosen

MATH COURSES THAT INVOLVES LESS PROOFS

AMS 311, Probability Theory Grade: A, 4.0/4.0

· Textbook: **A First Course in Probability**, 10th Ed., by Sheldon Ross

AMS 333, Mathematical Biology Grade: A, 4.0/4.0

· Textbook(recommended): **Essential Mathematical Biology**, by Nicholas Britton, Third, Ed.
· **Projects with Matlab Simulation**: Analysis of Bacteria Growth, LV Model, Influenza Epidemics

MAT 341, Applied Real Analysis Grade: A, 4.0/4.0

· Textbook: **Boundary Value Problems and Partial Differential Equations**, 6th Ed., by D. Powers

AMS 303, Graph Theory Grade: A, 4.0/4.0

· Textbook: **Introduction to Graph Theory**, 5th Ed., by R. Wilson
· Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.
· **Final Project on Cryptography**, wrote a Python program to assist in visualizing frequency patterns.

AMS 301, Finite Mathematical Structures Grade: A, 4.0/4.0

· Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.

AMS 315, Data analysis Grade: A, 4.0/4.0

· Textbook: **An Introduction to Statistical Methods and Data Analysis**, by Ott and Longnecker, 7th Edition
· **Final Project written in R(programming)**.

AMS 341 Operations Research I: Deterministic Models Auditing

· Unofficially audited this course offered via zoom from Stony Brook.
· Analytical methods(non-proof-based) in Linear Programming including formulation and interpretation of linear programming models; simplex method and its variations; primal dual methods

AMS 361, Applied Calculus IV: Differential Equations Grade: A, 4.0/4.0

· Textbook: **Lectures, Problems and Solutions for Ordinary Differential Equations**, by Yuefan Deng, Second Edition

AMS 310, Survey of Probability and Statistics Grade: A, 4.0/4.0

· Textbook: **Probability and Statistics for Engineering and Science with Examples in R**, Second Edition, by Hongshik Ahn

AMS 210, Applied Linear Algebra Grade: A, 4.0/4.0

· Textbook: **Introduction to Linear Algebra: Models, Methods and Theory**, by Alan Tucker

MAT 203, Calculus III with Applications Grade: A, 4.0/4.0

· Textbook: **Multivariable Calculus**, 8th Edition, by James Stewart