Introduction

Machine Learning Prerequisites

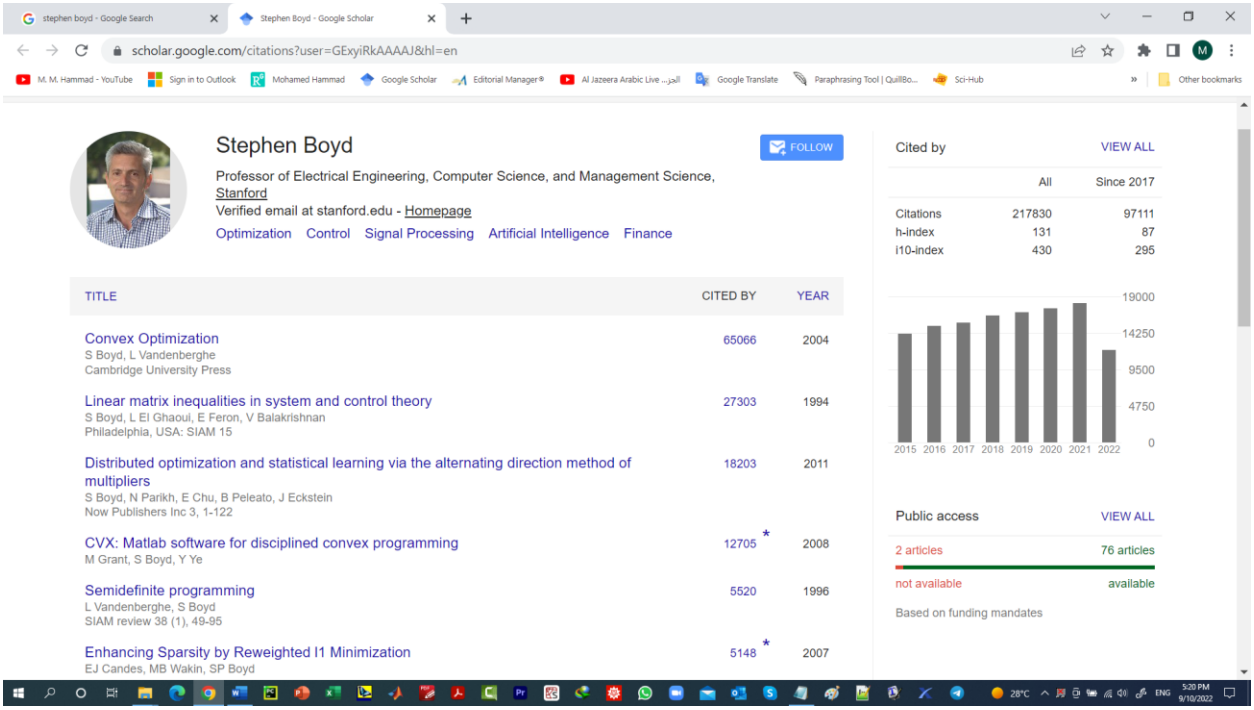
Step1: Fundamental Linear Algebra
Step2: Optimization
Step3: Probability and Statistics
Step4: Programming with Python
Step5: Machine Learning Models

Convex Optimization for Machine Learning

with Mathematica Applications

Contents

Big Names



Stephen Boyd

FOLLOW

Professor of Electrical Engineering, Computer Science, and Management Science, Stanford
Verified email at stanford.edu - Homepage
Optimization Control Signal Processing Artificial Intelligence Finance

TITLE	CITED BY	YEAR
Convex Optimization S Boyd, L Vandenberghe Cambridge University Press	65066	2004
Linear matrix inequalities in system and control theory S Boyd, L El Ghaoui, E Feron, V Balakrishnan Philadelphia, USA: SIAM 15	27303	1994
Distributed optimization and statistical learning via the alternating direction method of multipliers S Boyd, N Parikh, E Chu, B Peleato, J Eckstein Now Publishers Inc 3, 1-122	18203	2011
CVX: Matlab software for disciplined convex programming M Grant, S Boyd, Y Ye	12705 *	2008
Semidefinite programming L Vandenberghe, S Boyd SIAM review 38 (1), 49-95	5520	1996
Enhancing Sparsity by Reweighted l1 Minimization EJ Candes, MB Wakin, SP Boyd	5148 *	2007

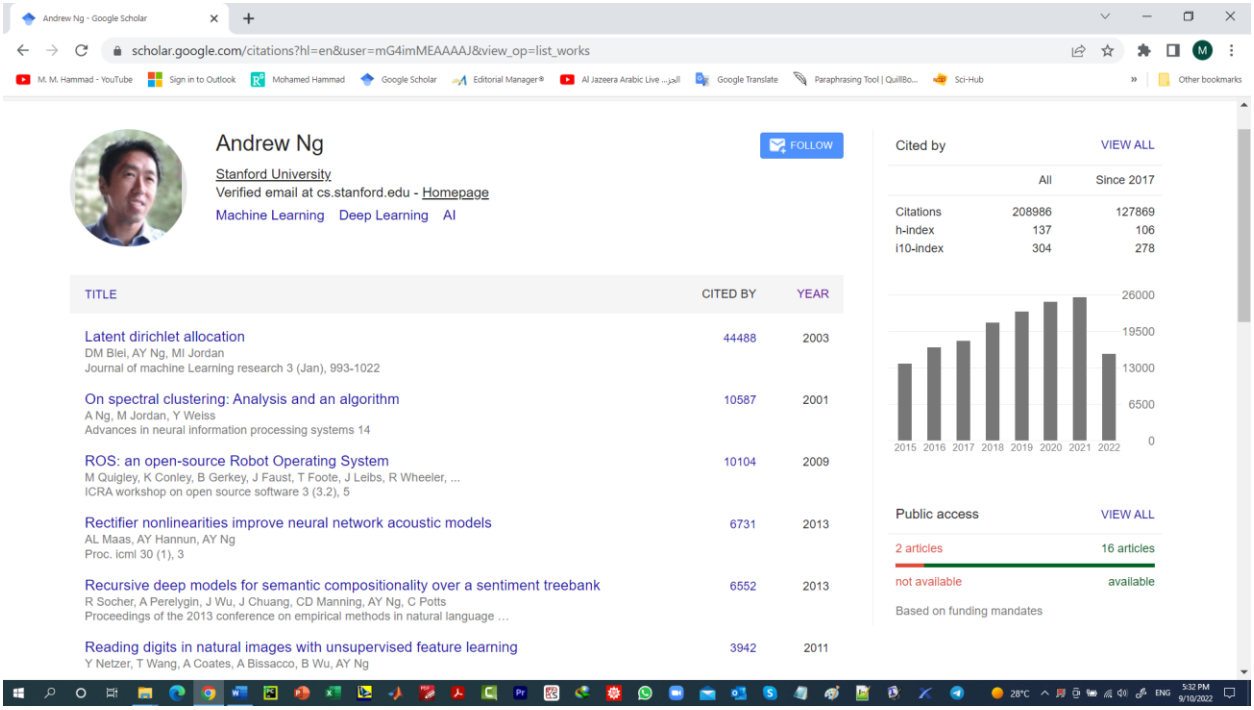
Cited by VIEW ALL

	All	Since 2017
Citations	217830	97111
h-index	131	87
i10-index	430	295

Public access VIEW ALL

2 articles 76 articles
not available available

Based on funding mandates



Andrew Ng

FOLLOW

Stanford University
Verified email at cs.stanford.edu - Homepage
Machine Learning Deep Learning AI

TITLE	CITED BY	YEAR
Latent dirichlet allocation DM Blei, AY Ng, MI Jordan Journal of machine Learning research 3 (Jan), 993-1022	44488	2003
On spectral clustering: Analysis and an algorithm A Ng, M Jordan, Y Weiss Advances in neural information processing systems 14	10587	2001
ROS: an open-source Robot Operating System M Quigley, K Conley, B Gerkey, J Faust, T Foote, J Leibs, R Wheeler, ... ICRA workshop on open source software 3 (3.2), 5	10104	2009
Rectifier nonlinearities improve neural network acoustic models AL Maas, AY Hannun, AY Ng Proc. icml 30 (1), 3	6731	2013
Recursive deep models for semantic compositionality over a sentiment treebank R Socher, A Perelygin, J Wu, J Chuang, CD Manning, AY Ng, C Potts Proceedings of the 2013 conference on empirical methods in natural language ...	6552	2013
Reading digits in natural images with unsupervised feature learning Y Netzer, T Wang, A Coates, A Bissacco, B Wu, AY Ng	3942	2011

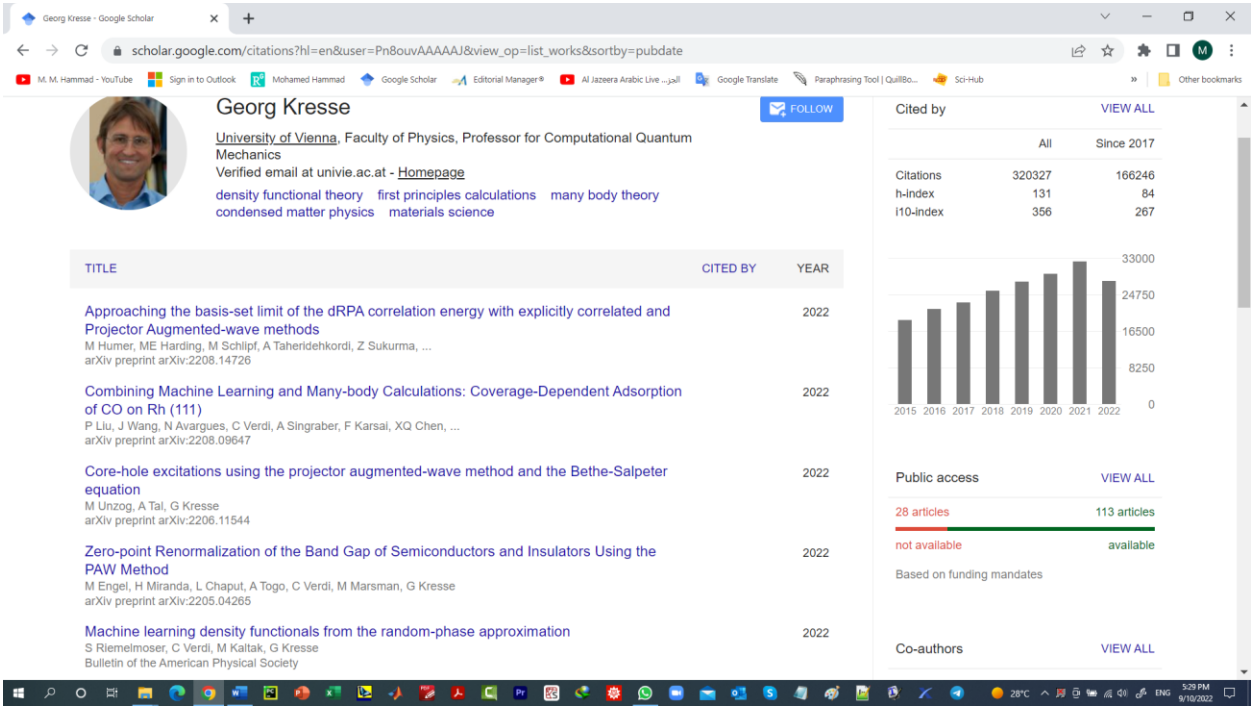
Cited by VIEW ALL

	All	Since 2017
Citations	208986	127869
h-index	137	106
i10-index	304	278

Public access VIEW ALL

2 articles 16 articles
not available available

Based on funding mandates


Georg Kresse - Google Scholar
scholar.google.com/citations?hl=en&user=Pn8ouvAAAAAJ&view_op=list_works&sortby=pubdate
Georg Kresse
FOLLOW
University of Vienna, Faculty of Physics, Professor for Computational Quantum Mechanics
Verified email at univie.ac.at - Homepage
density functional theory first principles calculations many body theory
condensed matter physics materials science
TITLE CITED BY YEAR
Approaching the basis-set limit of the dRPA correlation energy with explicitly correlated and Projector Augmented-wave methods 2022
M Humer, ME Harding, M Schlipf, A Taheridehkordi, Z Sukurma, ...
arXiv preprint arXiv:2208.14726
Combining Machine Learning and Many-body Calculations: Coverage-Dependent Adsorption of CO on Rh (111) 2022
P Liu, J Wang, N Avargues, C Verdi, A Singraber, F Karsai, XQ Chen, ...
arXiv preprint arXiv:2208.09647
Core-hole excitations using the projector augmented-wave method and the Bethe-Salpeter equation 2022
M Unzog, A Tal, G Kresse
arXiv preprint arXiv:2206.11544
Zero-point Renormalization of the Band Gap of Semiconductors and Insulators Using the PAW Method 2022
M Engel, H Miranda, L Chaput, A Togo, C Verdi, M Marsman, G Kresse
arXiv preprint arXiv:2205.04265
Machine learning density functionals from the random-phase approximation 2022
S Riemelmoser, C Verdi, M Kaltak, G Kresse
Bulletin of the American Physical Society
Cited by VIEW ALL
All Since 2017
Citations 320327 166246
h-index 131 84
i10-index 356 267
33000
24750
16500
8250
0
2015 2016 2017 2018 2019 2020 2021 2022
Public access VIEW ALL
28 articles 113 articles
not available available
Based on funding mandates
Co-authors VIEW ALL

Convex Optimization for Machine Learning (Books)

1- Edwin K. P. Chong, Stanislaw H. Zak , **An Introduction to Optimization** (2013).
2- Deb Kalyanmoy, **Optimization for Engineering Design: Algorithms and Examples** (2012).
3- Mykel J. Kochenderfer, Tim A. Wheeler, **Algorithms for Optimization** (2019).
4- Richard Bronson, **Operations Research** -Schaum Outline Series (1981).
5- Jorge Nocedal, Stephen J. Wright, **Numerical Optimization** (2006).

6- Stephen Boyd, Lieven Vandenberghe, **Convex Optimization** (2004).
7- R. Tyrrell Rockafellar, **Convex analysis** (1970).
8- Boris S. Mordukhovich, Nguyen Mau Nam, **An Easy Path to Convex Analysis and Applications** (2014).

Convex Optimization for Machine Learning (YouTube Playlists)

1. **Convex Optimization I**
   Stephen Boyd, Book(Convex Optimization)
   Stanford University

https://www.youtube.com/watch?v=McLq1hEq3UY&list=PL3940DD956CDF0622

2. **Optimization Algorithms**
   Constantine Caramanis
   University of Texas at Austin

https://www.youtube.com/channel/UCSv1_NZITsPl-abaCWtRrJg/playlists

3. **Convex Optimization**
   Nam Nguyen Book (An Easy Path to Convex Analysis and Applications)
   Portland State University

https://www.youtube.com/channel/UCZaO1k-BRgRQkG3SDLslQwA/playlists

4. **Large-scale convex optimization**
   Sebastian Banert

https://www.youtube.com/watch?v=84dDr6BJJmk&list=PLK8999LLfv8vABhiYsGq_gYCmrY0tpw4t

5. **Optimization methods for ML**
   Julius Pfrommer

https://www.youtube.com/watch?v=4_jiFQXPAsw&list=PLdkTDauaUnQpzuOCZyUUZc0lxf4-PXNR5

6. **Convex Optimization I**
   Sebastien Bubeck
   Microsoft Research

https://www.youtube.com/watch?v=77DjImkfc9E&list=PLAsrlO2SCuzCMf5p7YaC4WJCgrlXOyqYl

7. **Convex Optimization CMU 2018 fall**
   Ryan Tibshirani
   Carnegie Mellon University

https://www.youtube.com/watch?v=Di9f47LAzHQ&list=PLRPU00LaonXQ27RBcq6jFJnyIbGw5azOI

8. **Optimization Methods in Engineering Design**
   Saroj Kumar Patel
   NITR

https://www.youtube.com/watch?v=QTi0Mv7DGDs&list=PL7XCYAQpq_DPkyrj-LEi5Gn73Xx_u-J1Q

9. **Convex Optimization**
   Ahmad Bazzi
   New York University Abu Dhabi

https://www.youtube.com/watch?v=SHJuGASZwlE&list=PL-DDW8QIRjNOVxrU2efygBw0xADVOgpmw

10. **Optimization**
    Waleed A. Yousef
    Helwan University

https://www.youtube.com/watch?v=fz9XoDHxkzY&list=PLoK2Lr1miEm_Y3uZXLCPywdXL5oqKe7d3

11. **Applied Optimization for Wireless**
    Aditya Jagannatham
    IITK

https://www.youtube.com/watch?v=Ga4WaN__u88&list=PLFW6lRTa1g83Z2YAcz7kxrcPI2nJK6hjP