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Covenant University

Raising a new Generation of Leaders

Introducing

PETROLEUM DATA ANALYTICS SPECIAL INTEREST GROUP

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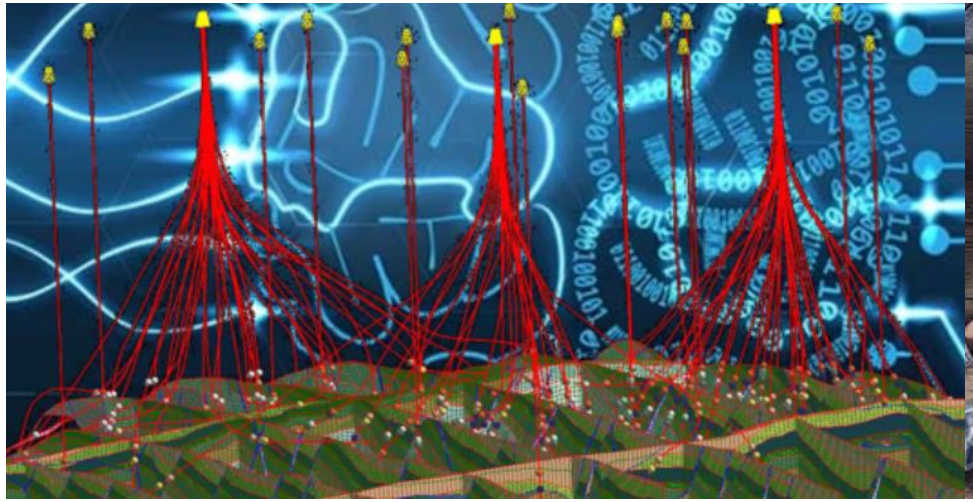
PETROLEUM DATA ANALYTICS SPECIAL INTEREST GROUP (PDA_SIG)



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  - StatQuest Youtube Channel

ABOUT PDA_SIG

The People

- The Petroleum Data Analytics Special Interest Group (PDA_SIG) is made up of Covenant University petroleum engineering students with demonstrated interest in petroleum engineering applications of:
  - data analytics (DA),
  - machine learning (ML), and
  - artificial intelligence (AI).

ABOUT PDA_SIG

The Vision

… towards leveraging on emerging career opportunities in petroleum data analytics, machine learning and artificial intelligence.

The Mission

… to foster **learning**, **upskilling** and **research** in issues of petroleum data analytics

ABOUT PDA_SIG

The Springboard

- PDA_SIG is springing off our three-year efforts in exposing CU-PETENG students to Python programming with petroleum engineering applications in a 300L course module – PET328.
  - See the PET328 e-portfolios at:
    - https://github.com/TTOWG/PET328_2021_Class
    - https://github.com/TTOWG/PET328_Class_2022
    - https://github.com/TTOWG/PET328_Class_2023

MEMBERSHIP

Pioneering Members

- The following CU-PETENG students have been selected as pioneering members of PDA_SIG.

  - David Adams
  - Abigail Asuku
  - Daniel Aghanwa
  - John Sosanwo
  - Wonderful Ike
  - Chinomso Ozor-Obi
  - Oluwatenirefunmi Akinbobola
  - Fortune Obialom
  - Mercy Olanrewaju
  - Oladimeji Ajala

Membership Recruitment

- As is the case for the pioneering members, subsequent sets of members shall be recruited based on the following considerations:
  - Activity level on DataCamp learning platform
  - Performance in PET328 assessments
  - Demonstrated interest in data science

- Recruitment would be on a rolling basis.
  - That is, at any point in time

- However, targeted recruitment shall take place yearly, at the end of the PET328 offering for that year

```
if you == 'A top performer in the exam':
    print('See you in PDA Cluster')
else:
    print('Bye, for now')
```

Membership Expectation

- While membership of PDA_SIG is free, existing members are to consistently meet some performance expectations, stated thus:
  - Regular attendance of PDA_SIG activities
    Training | Project meetings | Seminars | Skill acquisition | Assignments etc
  - Commitment to learning
    Courses | Books | Publications | Multimedia etc.
  - CAPIC Mindset:
    - Contributory – play your role
    - Active – get hands-on
    - Participatory – be involved
    - Intentional – be purposeful
    - Collaborative – team-up

Sustained Membership

- Membership of PDA_SIG is only sustained if a member meets expectations.
- A member deemed to be falling behind expectations shall be placed on a period of probation, with specific personal targets.
- A member on probation may be asked to vacate PDA_SIG if they fail to deliver on the probation targets.

TERMS OF REFERENCE

Short-Term: Activities and Timelines

Learning and Upskilling – till August, 2024

- In-house short-course on fundamentals of machine learning (December, 2023)
- Enrolment in and completion of assigned:
  - DataCamp courses
  - Applied Data Science Lab at WorldQuant University (August, 2024)
  - Kaggle courses
- Invited seminars from practitioners/researchers
- Reading engagements:
  - *Machine Learning Guide for Oil and Gas Using Python* (March, 2024)
  - *Introduction to Statistical Learning with R (ISLR)* (March, 2024)
- Engagements with Youtube Resourses:
  - StatQuest Channel
  - GeostatGuy (Prof. Pyrcz) Channel
- In-house/invited workshop on Python libraries: *numpy*, *matplotlib*, *pandas, scipy*, *sklearn*, *seaborn* and *plotly* (March, 2024)
- Reviews: papers, blogs, Notebooks e.t.c

TERMS OF REFERENCE

Long-Term: Activities and Timelines

Research and Innovations – beyond August 2024

- Project scouting
- Project proposals presentations
- Project execution
- Conferences and journal publications
- Final-year projects in PDA&ML
- Pioneers becoming mentors
- Participation and winning in SPE Student Paper Contests.
- Providing short-courses tour to SPE student chapters across Nigeria
- Graduate admission, scholarship and research advisory
- Research cluster for faculty members

Mentors' Roles

- PDA_SIG is being built to thrive on mentorship.
- Mentors – data science practitioners
- Mentors' roles:
  - Motivate on relevance of DA, ML and AI
  - Host seminars/talks/workshops
  - Identify research issues
  - Share experiences
  - Provide data for research
  - Inform on opportunities: educational, career, scholarships
  - Mentor-mentee grooming
  - General advisory

MENTORING

Confirmed Mentors

- Karen Nwosu – Cummins Inc.
- Deborah Alenkhe - BRP
- Nhoyidi Nsan – Imperial College

MENTORING

Proposed Mentors

- Michael Aku – CypherCrescent
- Zainab Titus – Imperial College
- Opeyemi Oludara – Imperial College

PLATFORMS AND RESOURCES

DataCamp

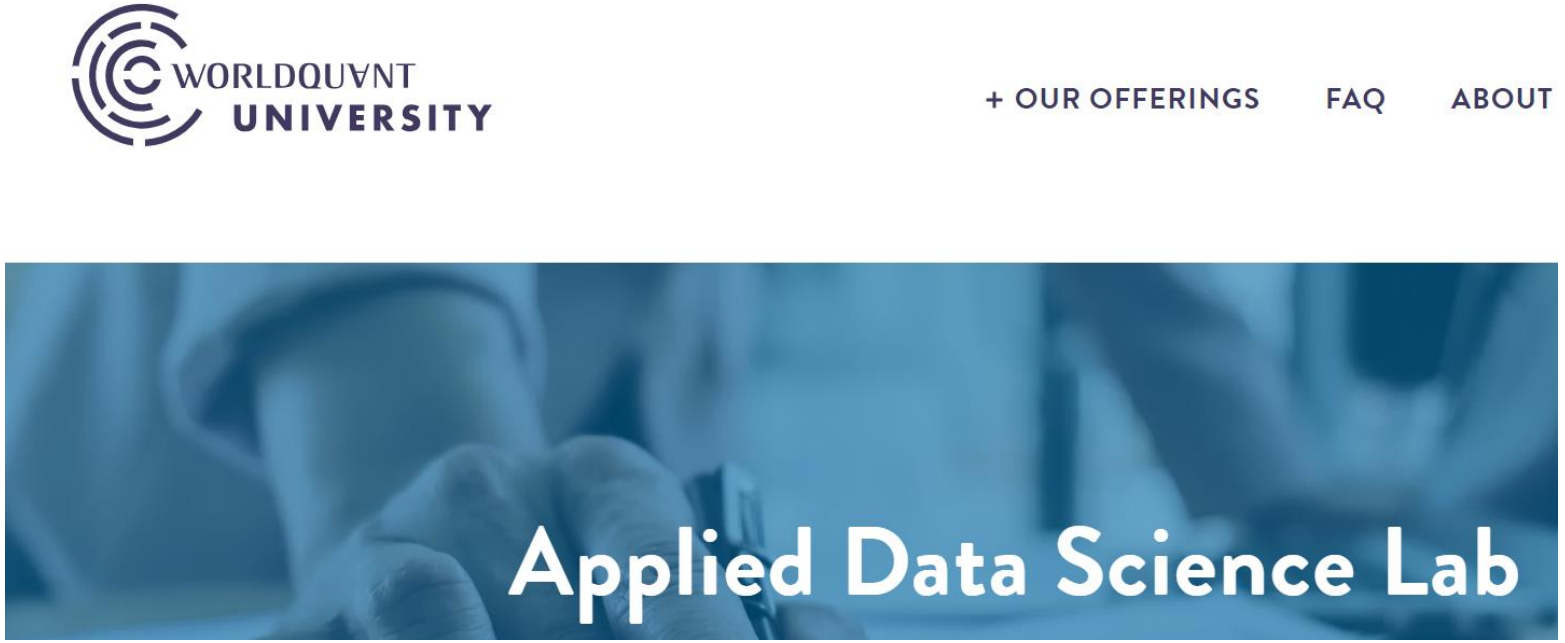
- Through the PET328 course, we secured 90 units of free license to DataCamp Classroom offer – giving full access to over 400 data science online courses.
  - Members of PDA_SIG will be added to the license.

- https://www.datacamp.com

PLATFORMS AND RESOURCES

WorldQuant University

https://www.wqu.edu/programs/applied-ds-lab/



PLATFORMS AND RESOURCES

Kaggle

https://www.kaggle.com/

kaggle Competitions Datasets Models Code Discussions Courses

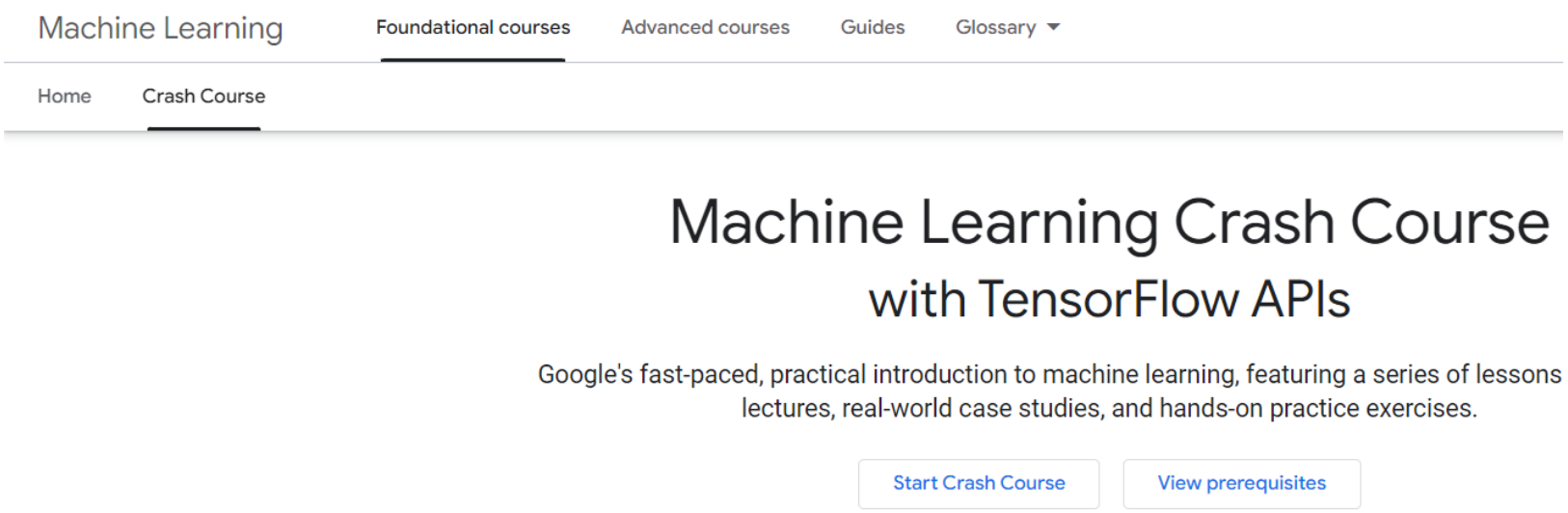
Level up with the largest AI & ML community

Join over 16M+ machine learners to share, stress test, and stay up-to-date on all the latest ML techniques and

PLATFORMS AND RESOURCES

Google Developer Machine Learning Course

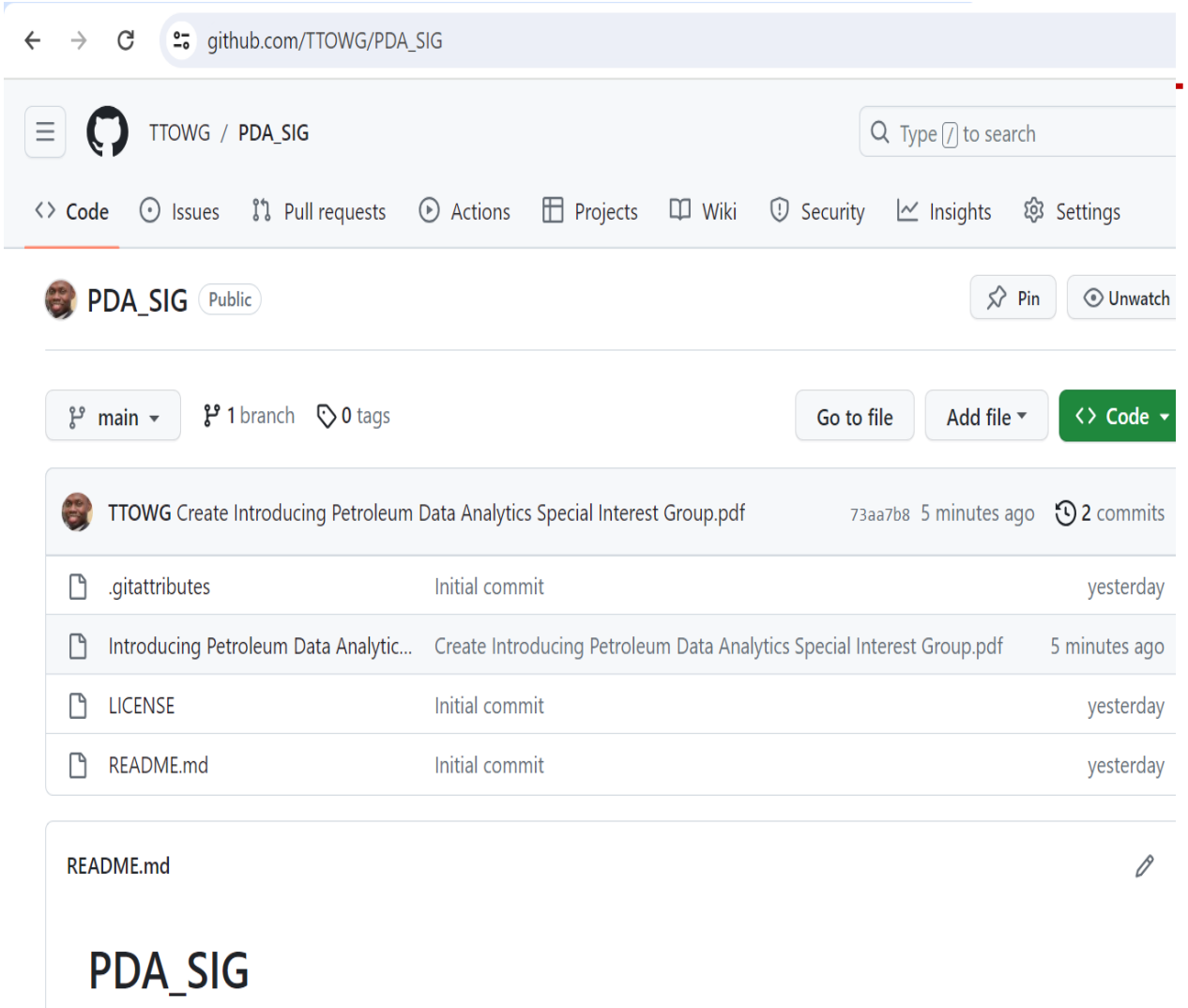
https://developers.google.com/machine-learning/crash-course



PLATFORMS AND RESOURCES

GitHub

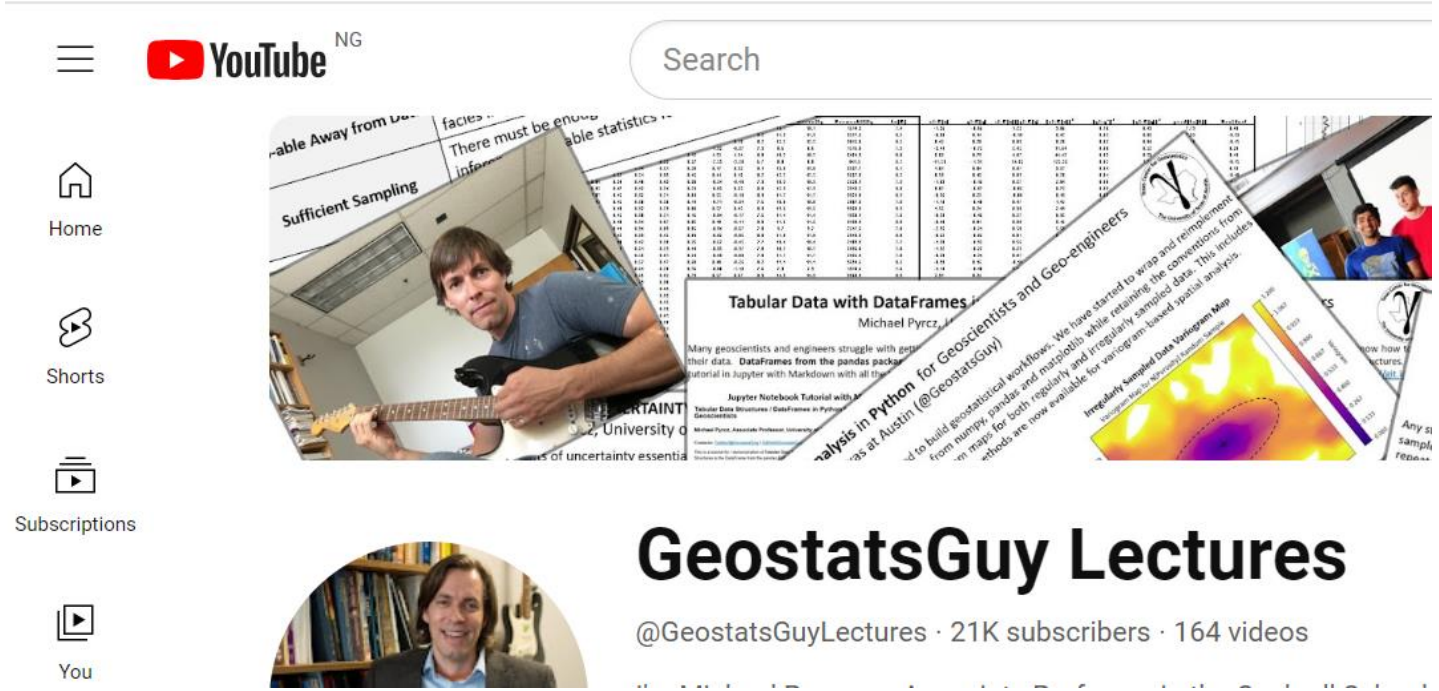
- Collaborations between PDA_SIG members and mentors would happen via GitHub.
- A GitHub repository has been created for PDA_SIG:
  - https://github.com/TTOWG/PDA_SIG



PLATFORMS AND RESOURCES

GeostatGuy Youtube Channel

https://www.youtube.com/@GeostatsGuyLectures

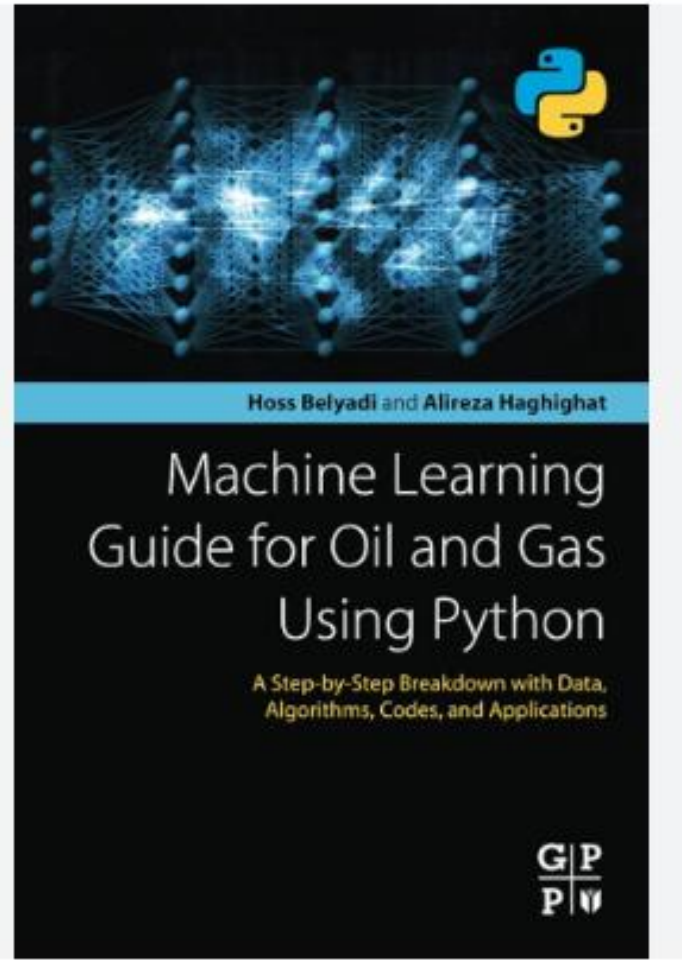


PLATFORMS AND RESOURCES

Machine Learning for Oil and Gas using Python

- https://shop.elsevier.com/books/machine-learning-guide-for-oil-and-gas-using-python/belyadi/978-0-12-821929-4

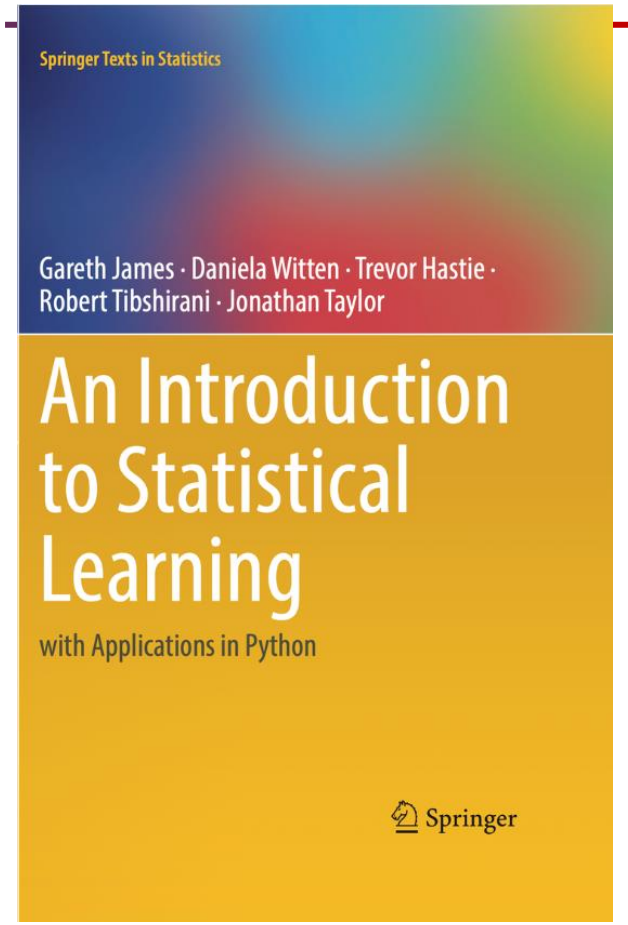
- Accompanying website contains Jupyter Notebooks and data.



PLATFORMS AND RESOURCES

Introduction to Statistical Learning with Python

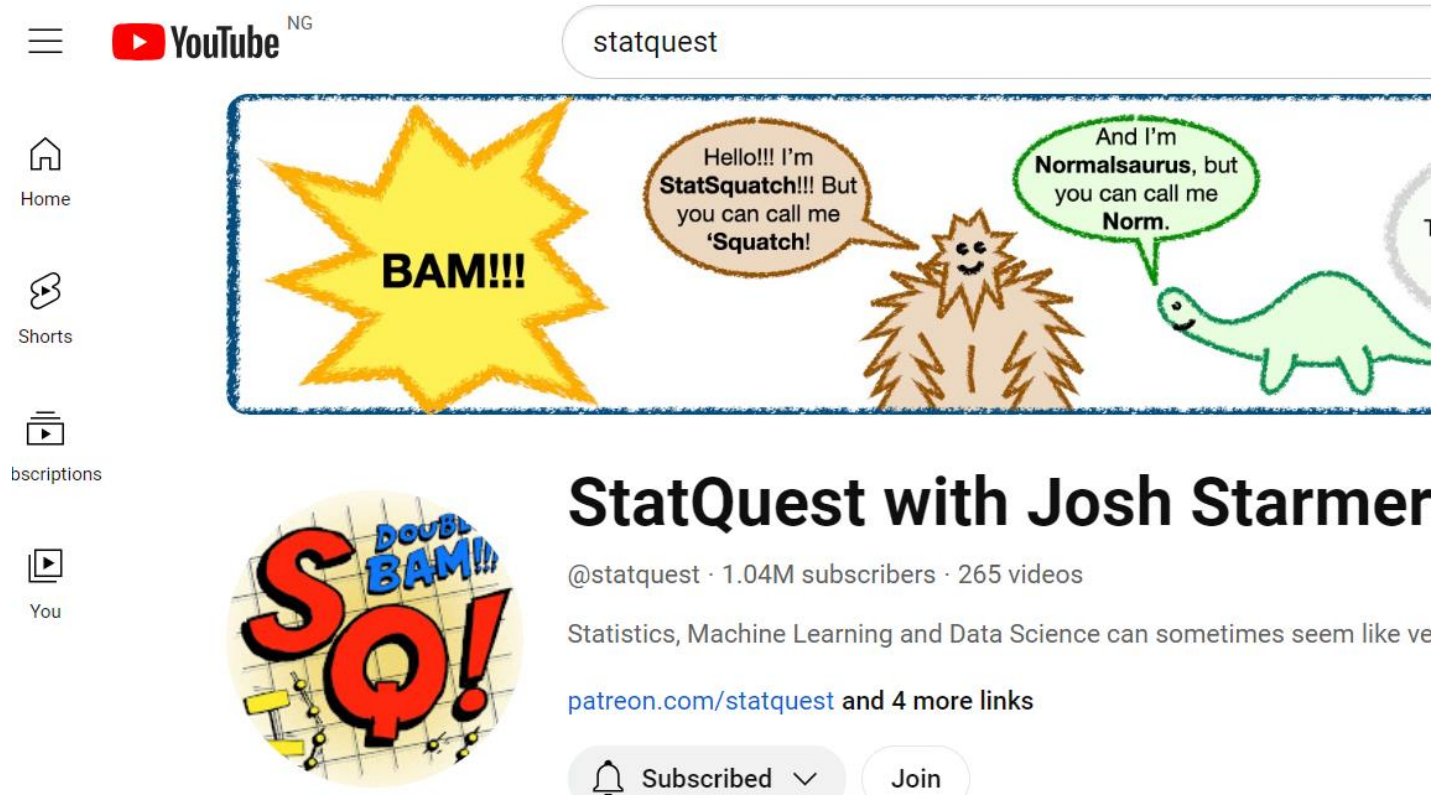
https://hastie.su.domains/ISLP/ISLP_website.pdf.download.html



PLATFORMS AND RESOURCES

StatQuest Youtube Channel

https://www.youtube.com/@statquest



PLATFORMS AND RESOURCES