

# What is GitHub?

...

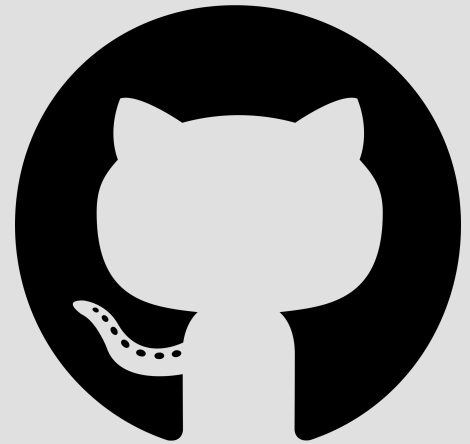
For AAE FYP students



# Today's Rundown

1. General Introduction about GitHub
2. Introduction of GitHub's working principle
3. Setup session
4. Demo session
5. Lab session
6. Follow up session

# What is GitHub?



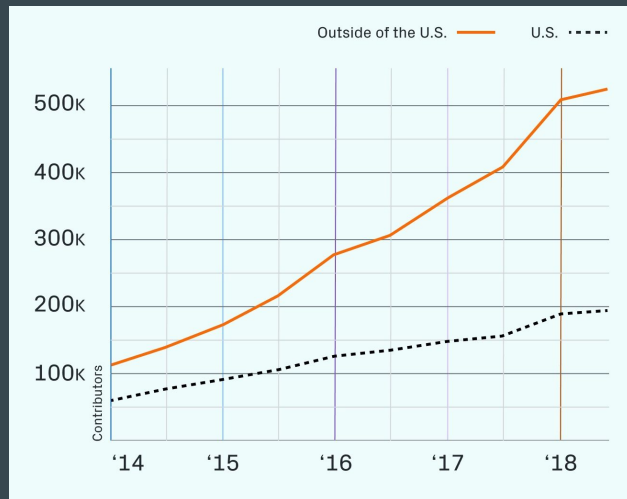
# What is Github?



- A social network and platform for software developers
  - Over 65 million users
  - A place to Share, Communicate, Collaborate with others, especially programmers
-

# What's on GitHub

- Over 100 million live Projects
- New projects increasing over the years
- Showing the trend of using GitHub for Software development




## Variety of GitHub

- Countless topics and projects available for the public
- Encompassing most popular topics nowadays



# BIG GitHub Pages

**Tesla, Inc.**  
<https://www.tesla.com/> Verified

Repositories **45** Packages **1** People **12** Projects **1**

Find a repository...

**kafka-helmsman**  
kafka-helmsman is a repository of tools that focus on automating a Kafka deployment  
Java MIT 18 56 2 (1 issue needs help) 11 0 Updated 11 hours ago

**perf\_data\_converter**  
forked from google/perf\_data\_converter  
Tool to convert Linux perf files to the profile.proto format used by gperf  
C++ BSD-3-Clause 10 1 0 0 Updated 12 days ago

**react-native-camera-kit**  
A high performance, easy to use iOS solid camera library for React Native apps.  
Objective-C MIT 340 1,444 12 16 Updated 11 days ago


**fixed-containers**  
C++ Read Containers  
C++ MIT 3 0 0 0 Updated on Jul 1

**mongo-go-driver**  
Forked from mongomongo-go-driver  
The Go driver for MongoDB  
Go Apache-2.0 670 52 0 0 Updated on Jun 29

**coreboot**  
Coreboot sources  
GPL-2.0 12 52 0 0 Updated on Jun 15

**linux**  
Linux sources  
GPL-2.0 149 207 0 0 Updated on Jun 15

**ansible-culler**

**Microsoft**  
Open source projects and samples from Microsoft  
Redmond, WA <https://opensource.microsoft.com> [@OpenSourceMicrosoft](#) [opensource@microsoft.com](mailto:opensource@microsoft.com) Verified

Repositories **426** Packages **1** People **436** Projects **12** Sponsoring **17**

Find a repository...

**Graphormer**  
This is the official implementation for "Do Transformers Really Perform Bad for Graph Representation?"  
graph transformer  
Python MIT 50 399 0 2 Updated 3 minutes ago

**calculator**  
Windows Calculator: A simple yet powerful calculator that ships with Windows  
windows xaml csharp cpp uwp windows-10  
C++ MIT 1,969 22,420 208 (5 issues need help) 13 3 Updated 3 minutes ago

**v8-ksi**  
React Native V8 JSI adapter  
C++ 16 25 2 11 Updated 4 minutes ago

**ts-gyb**  
Generating native code interfaces from TypeScript  
kotlin swift typescript webview code-generation javascriptcore hybrid-app  
TypeScript MIT 1 19 0 11 Updated 3 minutes ago

**onnxruntime**  
ONNX Runtime: cross-platform, high performance ML inference and training accelerator  
machine-learning deep-learning tensorflow scikit-learn pytorch neural-networks hardware-acceleration  
C++ MIT 1,177 4,967 395 (1 issue needs help) 11 105 Updated 7 minutes ago

**responsible-ai-widgets**  
This project provides responsible AI user interfaces for Fairlearn, interpret, community, and Error Analysis, as well as foundational building blocks that they


Top languages  
C# TypeScript Python JavaScript C++

Most used topics  
azure microsoft python machine-learning typescript

People  
4.5k >

Sponsoring  
44

Report abuse

**Google**  
Google ❤️ Open Source  
<https://opensource.google/> [@GoogleOSS](#) [opensource@google.com](mailto:opensource@google.com) Verified

Repositories **2.1k** Packages **1** People **1.2k** Projects **1**

Find a repository...

**closure-compiler-npm**  
Package for managing and documenting closure-compiler for use via npm  
JavaScript Apache-2.0 66 303 2 (1 issue needs help) 11 0 Updated 3 minutes ago

**it-cert-automation-practice**  
Google IT Automation with Python Professional Certificate - Practice files  
Python Apache-2.0 19,346 381 36 5,000+ Updated 4 minutes ago

**CFU-Playground**  
Want a faster ML processor? Do it yourself -- A framework for playing with custom opcodes to accelerate TensorFlow Lite for Microcontrollers (TFLM).  
tensorflow tfLite tflm  
C++ Apache-2.0 23 67 30 (1 issue needs help) 11 5 Updated 7 minutes ago

**pytype**  
A static type analyzer for Python code  
python typechecker types static-code-analysis linter static-analysis typing  
Python 200 3,367 93 (3 issues need help) 11 1 Updated 17 minutes ago

**trax**  
Trax — Deep Learning with Clear Code and Speed  
machine-learning reinforcement-learning deep-learning numpy deep-reinforcement-learning transformer jax  
Python Apache-2.0 627 6,355 72 (1 issue needs help) 11 13 Updated 17 minutes ago

**pigweed**  
microcontroller embedded cpp embedded-systems mcu  
C++ Apache-2.0 7 31 0 0 Updated 18 minutes ago

Top languages  
Python C++ Go JavaScript


Most used topics  
android security python java go

People  
1.2k >

Developer Program Member

Report abuse

# BIG GitHub Pages

**Boeing**

[Overview](#) [Repositories 3](#) [Packages](#) [People](#) [Projects](#)

Popular repositories

**modular\_navigation**  
C++ 6 5


**modular\_cartographer**  
C++ 5 5

**cartographer**  
C++ 5 3

**math6d**  
Python 2 1

image\_tran

C++

**Airbus Group**  
We design, manufacture and deliver industry-leading commercial aircraft, helicopters, military transports, satellites and launch vehicles  
Toulouse <https://www.airbus.com> [Verified](#)

[Overview](#) [Repositories 2](#) [Packages](#) [People](#) [Projects](#)

Popular repositories

**scikit-decide**  
AI framework for Reinforcement Learning, Automated Planning and Scheduling  
Python 14 7 10

**ED247\_LIBRARY**  
Example of ED-247 standard implementation  
C++ 13 7 7

Repositories


Find a repository...

Type Language Sort

**ED247\_LIBRARY**  
Example of ED-247 standard implementation  
C++ 13 7 7 3 1

**scikit-decide**  
AI framework for Reinforcement Learning, Automated Planning and Scheduling  
Python 14 7 10 2 1 0

[View all repositories](#)

**NASA**  
Read about NASA's Open Data initiative here: <https://www.nasa.gov/open/> & Members Find Instructions here: <http://nasa.github.io/>  
United States of America <https://github.com/nasa/nasa.github.io/> [nasa-data@lists.arc.nasa.gov](mailto:nasa-data@lists.arc.nasa.gov)

[Repositories 359](#) [Packages](#) [People 42](#) [Projects 1](#)

Pinned repositories

**nasa.github.io**  
<https://github.com/nasa/nasa.github.io/blob/master/docs/INSTRUCTIONS.md>  
HTML 238 52

Find a repository...

Type Language Sort

**fprime**  
F - A flight software and embedded systems framework  
[raspberrypi](#) [components](#) [real-time](#) [framework](#) [embedded](#) [cpp](#)  
[nasa](#)  
C++ Apache-2.0 961 8,370 68 (1 issue needs help) 7 Updated 34 minutes ago

**cumulus-orca**  
Python 7 13 0 1 Updated 1 hour ago

**ow\_autonomy**  
C++ 4 13 0 0 Updated 2 hours ago

**LHASA**  
Landslide Hazard Analysis for Situational Awareness  
R 7 8 0 0 Updated 2 hours ago

**earthdata-search**  
Earthdata Search is a web application developed by NASA EOSDIS to enable data discovery, search, comparison, visualization, and access across EOSDIS' Earth Science data holdings.  
[data-discovery](#) [hacktoberfest](#) [eosdis](#) [earthdata-search](#)  
JavaScript 202 618 14 1 Updated 3 hours ago

Top languages

C++ Python

Report abuse

Top languages


Python C C++ JavaScript

Jupyter Notebook

Most used topics

[nasa](#) [cumulus](#) [nasa-cumulus](#)  
[eosdis](#) [satellite](#)

People 42 >

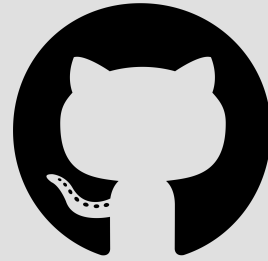


Developer Program Member

Report abuse

# What's on GitHub?

How is it related to AAE?





# Flight control softwares for UAV

Ardupilot, PX4 and more



ArduPilot / ardupilot

☆ Star 6k

<> Code Issues Pull requests

Open Move test\_onboard\_logging\_generation outside autotest.py

khancyr commented on May 27

## Feature request

Is your feature request related to a problem? Please describe.  
Move test\_onboard\_logging\_generation outside autotest.py to all to validate logger documentation before running the full autotest suite. Ideally, on CI it should run on build\_csharp with

PX4 / PX4-Autopilot

☆ Star 4.7k

<> Code Issues Pull requests

PX4 Autopilot Software

uav drone ros px4 pixhawk uas dronecode autopilot mavlink autonomous drones  
dds hacktoberfest ugv mavros multicopter qgroundcontrol fixed-wing fast-rtps avoidance

Updated 19 minutes ago C++

mavlink / qgroundcontrol

☆ Star 1.9k

<> Code Issues Pull requests

Cross-platform ground control station for drones (Android, iOS, Mac OS, Linux, Windows)

qt uav drone px4 pixhawk uas mavlink ardupilot

Updated 23 hours ago C++

# About These Softwares

## Ardupilot:

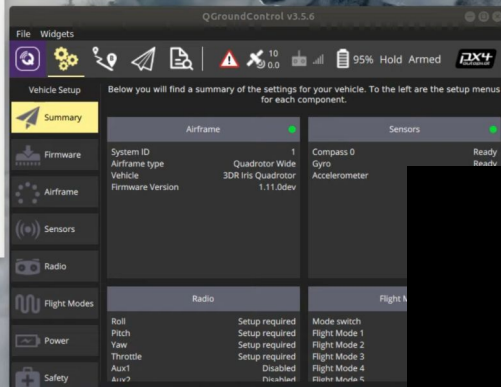
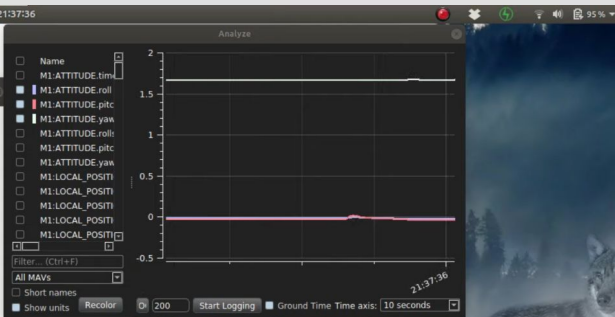
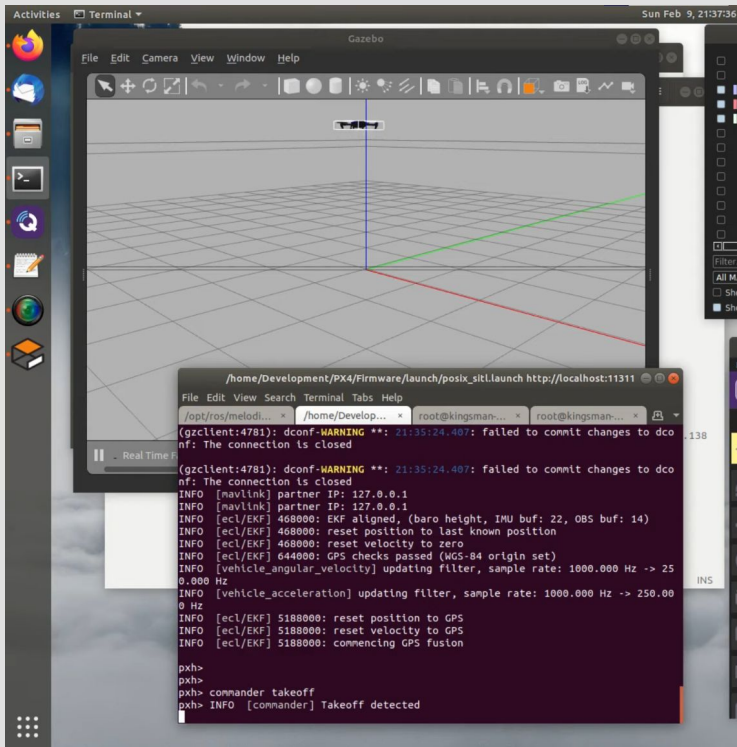
- Open source software suite
- Quadcopters, VTOL and more
- Cross platform
- Over 10 years of development and improvement



## PX4:

- Also open source
- Works with QGC and MAVLink (Also available in GitHub)





# Aviation Services Engineering

Logistics and Facility  
Management and more

# airport

Here are 148 public repositories matching this topic...

Language: All

Sort: Best match

Ysurac / FlightAirMap

Star 388

Code Issues Pull requests

Open source project displaying live aircrafts, ships or trackers on 2D/3D map. Browse through the data based on a particular aircraft, airline, airport, tracker or vessel to search through the database or see extensive statistics. Can use ADS-B in SBS1 format (dump1090, Radarcapex...). VRS, VA (VATSIM, IVAO whazzup.txt, phpvms...). ACARS (acarsdec, acarsdeco2), APRS, AIS as datasource.

tracker cesium crash metar airport airline flight ship vatsim aircraft icao acars  
glidernet phpvms notam modes ads-b sbs vessel 3d-map

Updated on Nov 25, 2020 TSQL

felix-dumit / FSDAirportFlipLabel

Star 83

Code Issues Pull requests

UILabel like old Airport flipping labels

ios label ios-animation airport

Updated on Mar 9, 2018 Objective-C

Ivysauro / CNRT

Star 74

Code Issues Pull requests Discussions

中国轨道交通数据库（非技术类） - 另一角度看地铁 / Data base of China Rail Transit (Non-tech) - Another view of Rail Transit

bus metro payment railway china airport subway rail-transit

Updated 3 days ago SCSS

gravity-EDDS / EDDS-freeware-releases

Star 57

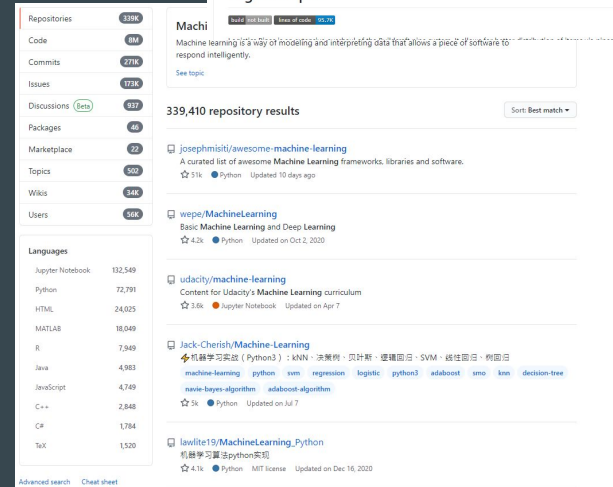
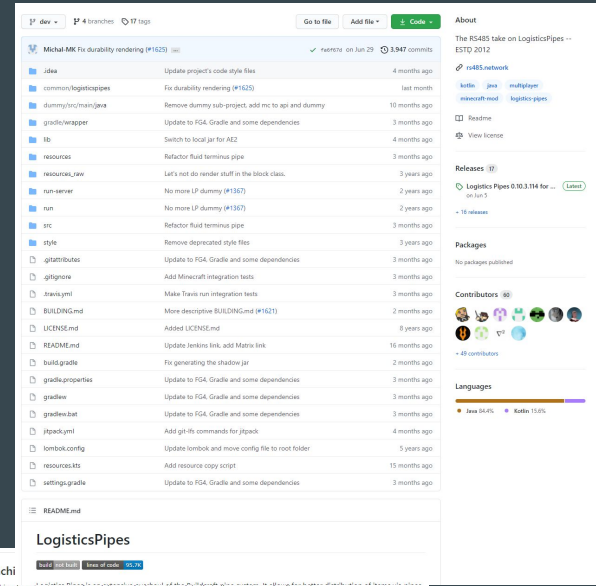
Code Issues Pull requests

# Logistics and Facility Management

- Data analysis resources
- System modelling and simulations
- Logistical models

# Machine learning for data analysis

- Faster analysis
- Potential extra self-learning for students
- Extremely beneficial to their careers



# Aeronautical Engineering

Material, aircraft designs, CFD and more

## # computational-fluid-dynamics

Here are 198 public repositories matching this topic...

Language: All Sort: Best match

**doyubkim / fluid-engine-dev** ☆ Star 1.1k

Code Issues Pull requests

Fluid simulation engine for computer graphics applications

c-plus-plus visual-studio sdk animation computer-graphics physics-engine computational-physics  
fluid-simulation-engine computational-fluid-dynamics

Updated on Apr 25 C++

**CubbyFlow / CubbyFlow** ☆ Star 175

Code Issues Pull requests

Voxel-based fluid simulation engine for computer games

cplusplus cpp computer-graphics physics-engine computational-physics cpp17  
fluid-simulation-engine computational-fluid-dynamics

Updated 6 days ago C++

**AvtechScientific / ASL** ☆ Star 153

Code Issues Pull requests

Advanced Simulation Library - hardware accelerated multiphysics simulation platform.

crystallography gpgpu scientific-computing high-performance-computing design-space-exploration  
computational-fluid-dynamics virtual-sensing image-guided-surgery computer-aided-engineering

Updated on Dec 21, 2018 C++

**lolverhennigh / Steady-State-Flow-With-Neural-Nets** ☆ Star 119

Code Issues Pull requests

A Tensorflow re-implementation of the paper Convolutional Neural Networks for Steady Flow Approximation

## # aircraft-design

Here are 21 public repositories matching this topic...

Language: All Sort: Best match

**JSBSim-Team / jsbsim** ☆ Star 394

Code Issues Pull requests Discussions

Open XML validation 14

boconeri commented on Jan 12, 2019

JSBSim provides schemas for XML validation ( 3885ia.xml for flight models, 3885iaScript.xml for script files and 3885iaSystem.xml for system files) but they have not been updated for a while so they might reject perfectly valid XML files.

XML files can be tested with xmlint:

```
xmlint --root --schema 3885ia.xml <path>...</path>.xml
```

Read more

Stop Help Good first issue

**Aero Sandbox**  
by Peter Sharpe

**peterdsharpe / AeroSandbox** Sponsor ☆ Star 236

Code Issues Pull requests

Aircraft design optimization made fast through modern automatic differentiation. Plug-and-play analysis tools for aerodynamics, propulsion, structures, trajectory design, and much, much more.

python analysis optimization aerospace automatic-differentiation airplane cfd aircraft  
aerodynamics vlm xflr aircraft-design mdo mdae aerodynamic-analysis 3d-panel

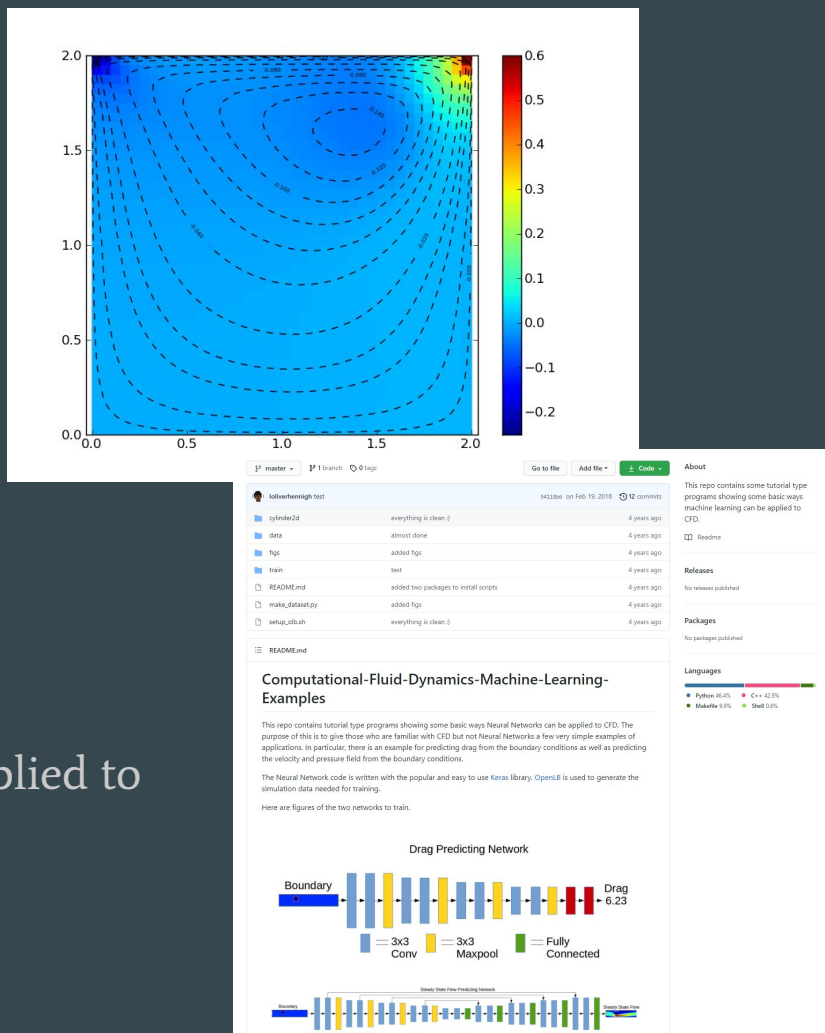
Updated 4 days ago 10 contributors

# CFD Python

- Full course for CFD Python
- Course Materials (Lectures and videos)
- Software resources


# CFD and Machine Learning

- Making use of ML
- Showing how neural networks can be applied to CFD



# Aircraft Maintenance

Propulsion, NDT and more




## NASA Jet Propulsion Laboratory

A world leader in the robotic exploration of space

📍 Pasadena, California, US 🌐 <http://www.jpl.nasa.gov> ✉ [github@jpl.nasa.gov](mailto:github@jpl.nasa.gov)


🏠 Overview 📁 Repositories 26 📦 Packages 👤 People 6 📁 Projects

### Pinned

**open-source-rover**


A build-it-yourself, 6-wheel rover based on the rovers on Mars!

🟡 Gnuplot ⭐ 6.8k 🐙 1.1k

**osr-rover-code**


Code that runs on the Open Source Rover

🟢 Python ⭐ 267 🐙 96

**COVID-19-respirators**


JPL designed 3D and tested printed respirators to help with the COVID-19 pandemic response.

🟡 G-code ⭐ 104 🐙 18

**osr-android-app**


Android application used to control the Open Source Rover

🟡 Java ⭐ 59 🐙 30

**SPOC**

A website showcasing SPOC (Soil Property and Object Classification), a deep learning-based terrain classifier for Mars rovers

🔴 HTML ⭐ 6 🐙 1

**spoc\_lite**

A light-weight, experimental terrain classifier for Mars rovers

🔴 C++ ⭐ 7 🐙 4

### Repositories


🔍 Find a repository...

Type ▾ Language ▾ Sort ▾

**itslive**

A NASA MEASURES project to provide automated, low latency, global glacier flow and elevation change datasets


🟡 Jupyter Notebook ⭐ 4 🏢 MIT 🐙 0 🕒 3 📁 0



**LiveViewLegacy**

Real-time tools for Imaging Spectroscopy Data


🔴 C++ ⭐ 18 🐙 7 🕒 0 📁 0



**open-source-rover**


A build-it-yourself, 6-wheel rover based on the rovers on Mars!

🟡 Gnuplot ⭐ 6,765 🏢 Apache-2.0 🐙 1,104 🕒 34 (1 issue needs help) 📁 8



**itslive-projects**


Jupyter Notebook ⭐ 0 🏢 MIT 🐙 0 🕒 0 📁 0



**sstmp**


Solar System Treks Mosaic Pipeline

🟢 Python ⭐ 4 🏢 Apache-2.0 🐙 0 🕒 21 📁 0



**jsd**

Just SOEM Drivers





# Example on NDT

- Resources on the whole conference
  - 20th World Conference on Non-Destructive Testing
- Documentation and software resources
- Applying LSTM to NDT

The screenshot shows the GitHub repository page for 'xaviergoby/LSTMforSHM'. The repository is in the 'master' branch, has 3 branches, and 0 tags. It was created on Oct 21, 2020, and has 67 commits. The file list includes 'configs\_and\_settings', 'literature', 'results', 'src', '.gitignore', 'LICENSE', 'README.md', '\_init\_.py', 'call\_mainscript.py', 'main.py', 'main\_v2.py', 'main\_v3\_xav.py', 'p2atR.jpg', and 'settings.py'. The README.md file is selected, showing the title 'Sequential Modelling in Data-Driven Approach for Structural Health Monitoring by Recurrent Convolutional Neural Networks'. The README content includes the conference details (20th World Conference on Non-Destructive Testing, South Korea, Seoul - June 2020), authors (Ewald V., Goby X., Groves R.M., & Benedictus R.), and laboratory (TU Delft Aerospace NDT Lab). It also has sections for 'Usage Instruction' and 'Dev Progress Log-Journal, Data Characteristics & Background Information'. The right sidebar shows the repository's description, a list of related repositories, a 'Releases' section with no published releases, a 'Packages' section with no published packages, a 'Contributors' section with two contributors (xaviergoby and vewald), an 'Environments' section with one active environment (github-pages), and a 'Languages' section showing Python at 100.0%.

master 3 branches 0 tags Go to file Add file Code

vewald Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM 0f00291 on Oct 21, 2020 67 commits

configs_and_settings	recent work	10 months ago
literature	non-code commit	13 months ago
results	Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM	10 months ago
src	recent work	10 months ago
.gitignore	recent work	10 months ago
LICENSE	Initial commit	2 years ago
README.md	Revert "Revert "Results Update""	13 months ago
_init_.py	1st commit of og Vicent lstm & my data_loading script w/ data and labels	2 years ago
call_mainscript.py	Update results	10 months ago
main.py	recent work	10 months ago
main_v2.py	Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM	10 months ago
main_v3_xav.py	recent work	10 months ago
p2atR.jpg	non-code commit	13 months ago
settings.py	recent work	10 months ago

README.md

## Sequential Modelling in Data-Driven Approach for Structural Health Monitoring by Recurrent Convolutional Neural Networks

Conference: 20th World Conference on Non-Destructive Testing  
Location & Date: South Korea, Seoul - June 2020  
Co-authors: Ewald V., Goby X., Groves R.M. & Benedictus R.  
Laboratory: TU Delft Aerospace NDT Lab

### Usage Instruction

In order to make use of this project all you need mainly be concerned with is the main.py Python script. In it you shall (hopefully) find yourself a more than sufficient amount of documentation in order to understand and be able to make use of it!

### Dev Progress Log-Journal, Data Characteristics & Background Information

Notes:

About

Application of LSTM network for Structural Health Monitoring & Non-Destructive Testing

xaviergoby.github.io/convlstm-compu...

computer-vision timeseries tensorflow  
keras cnn waves lstm  
supervised-learning classification shm  
ultrasonic-sensor ndt  
structural-engineering structural-analysis  
convlstm structural-health-monitoring  
lambwaves pzt aircraft-inspection  
non-destructive-testing

Readme  
MIT License

Releases

No releases published

Packages

No packages published

Contributors 2

xaviergoby Alexander Xavier O'Rour...  
vewald

Environments 1

github-pages Active

Languages

Python 100.0%

# Navigation and Positioning

## RTKLIB, VINS, ORB\_SLAM3, ROS and more

The image displays three screenshots of GitHub repository pages, arranged vertically. Each screenshot shows the repository's structure, including files and folders, and the right-hand sidebar with information like 'About', 'Releases', 'Packages', and 'Contributors'.

- Top Screenshot: ORB\_SLAM3**
  - Repository: `U2-SLAMLab / ORB_SLAM3`
  - Files: `richard-ehvira Readme.md updated`, `Examples`, `ThirdParty`, `Vocabulary`, `evaluation`, `include`, `src`, `.gitignore`, `CMakeLists.txt`, `Changelog.md`, `Dependencies.md`, `LICENSE`, `README.md`, `build.sh`, `build_ros.sh`.
  - Right sidebar: 'About' (ORB\_SLAM3: An Accurate Open-Source Library for Visual, Visual-Inertial and Multi-Map SLAM), 'Releases' (2 tags), 'Packages' (No packages published), 'Contributors' (4).
- Middle Screenshot: tomojitakasu / RTKLIB**
  - Repository: `tomojitakasu / RTKLIB`
  - Files: `app`, `bin`, `brd`, `data`, `doc`, `lib`, `src`, `Test`.
  - Right sidebar: 'About' (No description, website, or topics provided), 'Releases' (3), 'Packages' (18 published).
- Bottom Screenshot: HKUST-Aerial-Robotics / VINS-Mono**
  - Repository: `HKUST-Aerial-Robotics / VINS-Mono`
  - Files: `shanzu update readme`, `ar_demo`, `benchmark_publisher`, `camera_model`, `config`, `docker`, `feature_tracker`, `pose_graph`, `support_files`, `vins_estimator`, `.gitignore`, `LICENSE`, `README.md`.
  - Right sidebar: 'About' (A Robust and Versatile Monocular Visual-Inertial State Estimator), 'Releases' (No releases published), 'Packages' (No packages published), 'Contributors' (5), 'Languages' (C++ 92.0%, CMake 1.0%, Other 0.3%).