



7 BILLION PEOPLE

200 COUNTRIES

ALL PRODUCING DATA

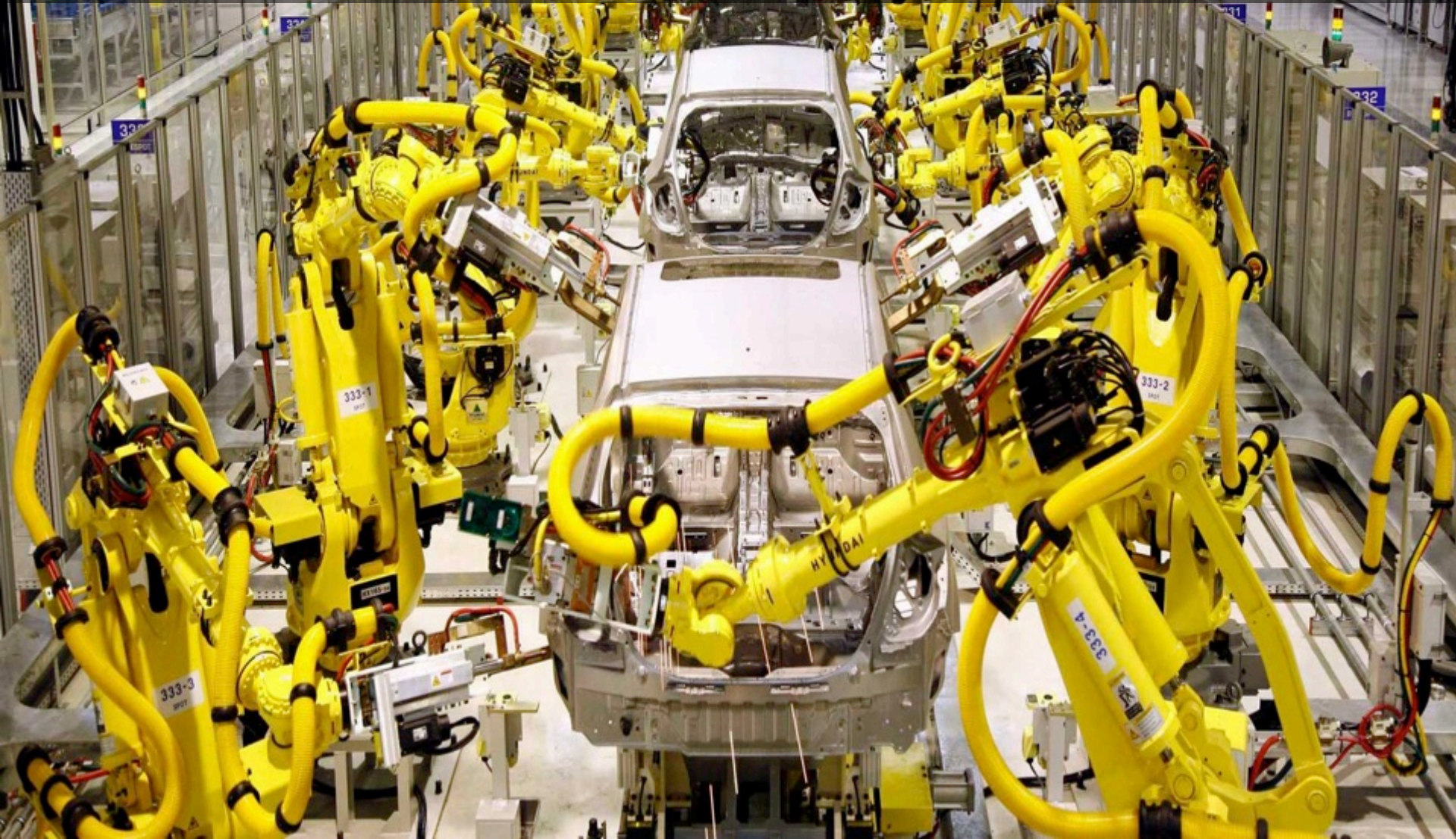
Engineering Computation
& Data Science

Abel Sanchez, abel@mit.edu, John R Williams, jrw@mit.edu
Massachusetts Institute of Technology

Rise of Systems & Data



More Systems & More Data





 **STORM ADVISORY**
5 HRS REMAINING


| | | | | |
|-------|------|------|------|------|
| 12 PM | 1 PM | 2 PM | 3 PM | 4 PM |
| | | | | |
| 73° | 72° | 68° | 63° | 62° |

 4" EXPECTED RAINFALL

Everywhere



Abstractions for Building Software Systems Have Risen

A person wearing a white helmet, dark jacket, and orange gloves is walking on a snowy mountain peak. The background shows a vast, rugged mountain landscape under a cloudy sky. The person is holding a climbing tool in their right hand.

New normal: A Single Person can
Build a Complex Software System



New normal: A Small Team can
Challenge an Industry

Cloud
Computation

Data
Science

IIOT

Machine
Learning

PILLARS



WEB



DEVICES



DATASCIENCE



SECURITY



COMPUTATION



VISUALIZATION



MACHINE LEARNING



CLOUD

1.00 Engineering Computation & Data Science

John R. Williams, Abel Sanchez, Lecture: MWF 9:30-11 (1-390)

[Home](#)[Lectures](#)[Homeworks](#)[Labs](#)[Videos](#)[About](#)

Engineering Computation and Data Science

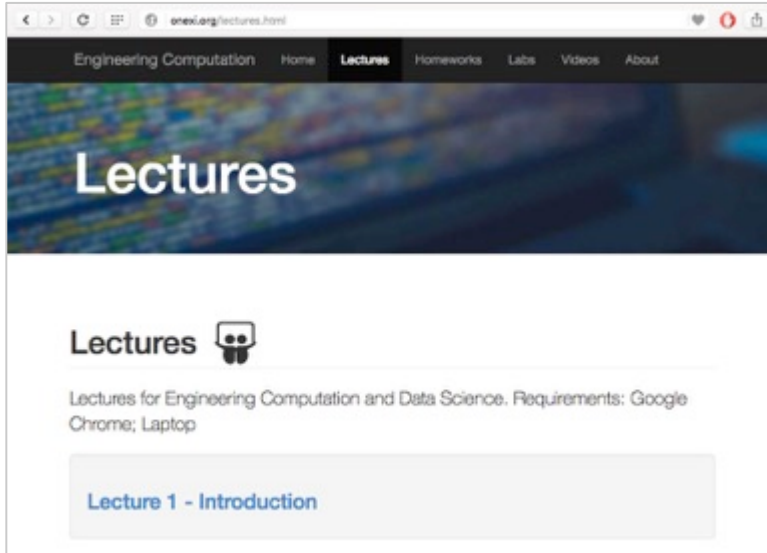
Introduces the fundamentals of computational thinking and data science in engineering computation.

[Learn more](#)

Requires Google Chrome, Course by Abel Sanchez and John Williams

<http://onexi.org>

All Content Online, <http://fullstacks.org>



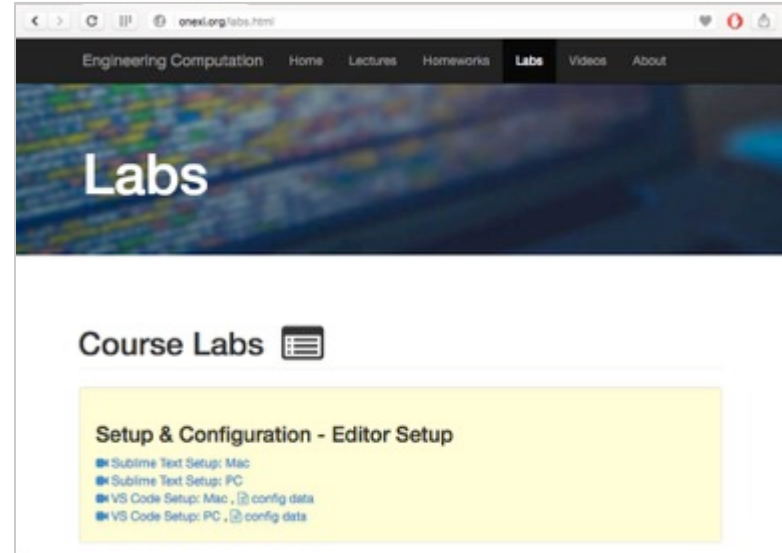
The screenshot shows the 'Lectures' page of the onexl.org website. The navigation bar at the top includes 'Engineering Computation', 'Home', 'Lectures' (which is highlighted), 'Homeworks', 'Labs', 'Videos', and 'About'. The main header area has a dark background with the word 'Lectures' in white. Below this, the page title 'Lectures' is followed by a small icon of two people. A paragraph states: 'Lectures for Engineering Computation and Data Science. Requirements: Google Chrome; Laptop'. A light gray box contains the link 'Lecture 1 - Introduction'.

Engineering Computation Home **Lectures** Homeworks Labs Videos About

Lectures

Lectures for Engineering Computation and Data Science. Requirements: Google Chrome; Laptop

[Lecture 1 - Introduction](#)



The screenshot shows the 'Labs' page of the onexl.org website. The navigation bar is the same as the previous page, but 'Labs' is highlighted. The main header area has a dark background with the word 'Labs' in white. Below this, the page title 'Course Labs' is followed by a small icon of a document with a list. A yellow box contains the title 'Setup & Configuration - Editor Setup' followed by a list of links: 'Sublime Text Setup: Mac', 'Sublime Text Setup: PC', 'VS Code Setup: Mac', and 'VS Code Setup: PC'. Each link has a small icon and a 'config data' link next to it.

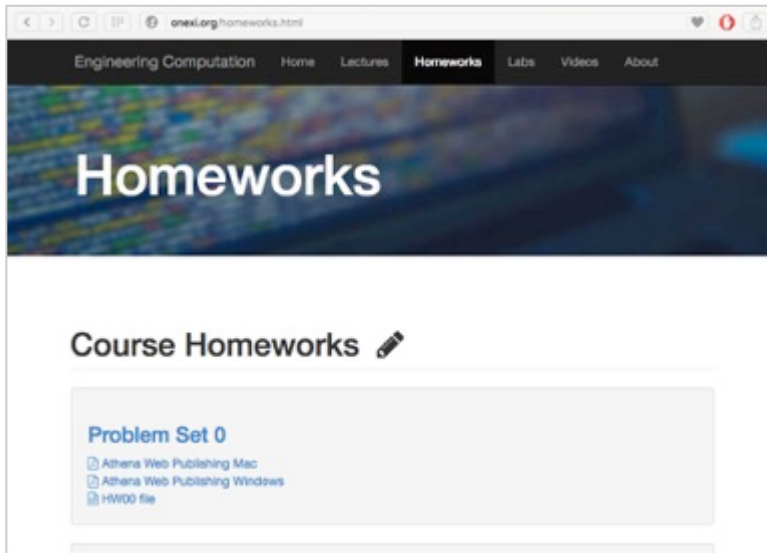
Engineering Computation Home Lectures Homeworks **Labs** Videos About

Labs

Course Labs

Setup & Configuration - Editor Setup

- Sublime Text Setup: Mac
- Sublime Text Setup: PC
- VS Code Setup: Mac
- VS Code Setup: PC



The screenshot shows the 'Homeworks' page of the onexl.org website. The navigation bar is the same as the previous pages, but 'Homeworks' is highlighted. The main header area has a dark background with the word 'Homeworks' in white. Below this, the page title 'Course Homeworks' is followed by a small icon of a pencil. A light gray box contains the title 'Problem Set 0' followed by three links: 'Athena Web Publishing Mac', 'Athena Web Publishing Windows', and 'HW00 file'.

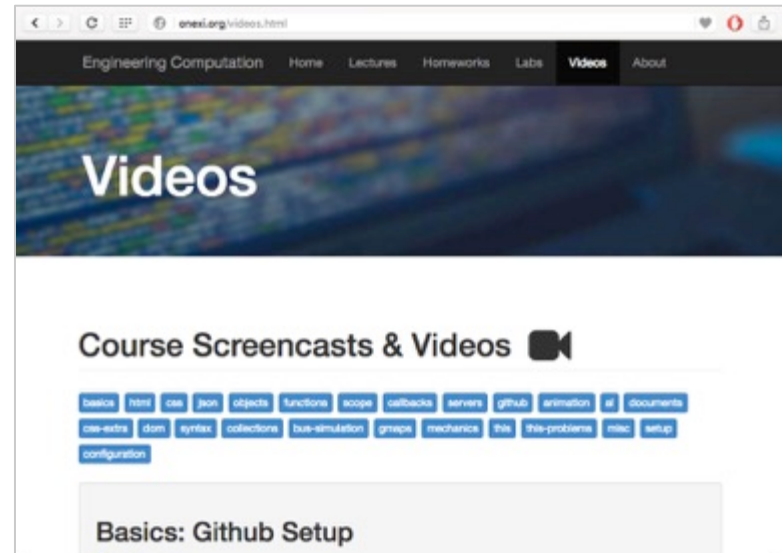
Engineering Computation Home Lectures Homeworks **Labs** Videos About

Homeworks

Course Homeworks

Problem Set 0

- Athena Web Publishing Mac
- Athena Web Publishing Windows
- HW00 file



The screenshot shows the 'Videos' page of the onexl.org website. The navigation bar is the same as the previous pages, but 'Videos' is highlighted. The main header area has a dark background with the word 'Videos' in white. Below this, the page title 'Course Screencasts & Videos' is followed by a small icon of a video camera. A grid of blue buttons contains various topics: 'basics', 'html', 'css', 'json', 'objects', 'functions', 'scope', 'callbacks', 'servers', 'github', 'animation', 'ai', 'documents', 'css-extra', 'dom', 'syntax', 'collections', 'bus-simulation', 'grape', 'mechanics', 'this', 'file-problems', 'misc', 'setup', and 'configuration'. A light gray box at the bottom contains the title 'Basics: Github Setup'.

Engineering Computation Home Lectures Homeworks Labs **Videos** About

Videos

Course Screencasts & Videos

basics html css json objects functions scope callbacks servers github animation ai documents
css-extra dom syntax collections bus-simulation grape mechanics this file-problems misc setup
configuration

Basics: Github Setup

Class Template

Class Prep



Mini Lectures



Active Learning



