AI Programming with Python Nanodegree Syllabus

Contact Info

While going through the program, if you have questions about anything, you can reach us at support@udacity.com. For help from Udacity Mentors and your peers visit the Udacity Classroom.

Nanodegree Program Info

Learn the essential foundations of AI: the programming tools (Python, NumPy, PyTorch), the math (calculus and linear algebra), and the key techniques of neural networks (gradient descent and backpropagation).

Prerequisite Skills

A well-prepared learner is able to:

- Basic computer skills like managing files, navigating the Internet, and running programs will be useful.
- Basic algebra, and programming knowledge in any language.

Required Software

- Python 3.6
- Anaconda 4.7 or latest
- Jupyter notebook 6.0.1 or latest
- GIT BASH 2.23 or latest
- pip
- Pandas, Numpy

Version: 6.0.0

Length of Program: 76 Days*

** This is a self-paced program and the length is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. Actual hours may vary.*

Part 1: Introduction to AI Programming

Welcome to the AI programming with python Nanodegree Program! Come and explore the beautiful world of

AI.

Part 2: Introduction to Python

Start coding with Python, drawing upon libraries and automation scripts to solve complex problems quickly.

Project: Use a Pre-trained Image Classifier to Identify Dog Breeds

Supporting Lessons

Lesson	Summary
Why Python Programming	Welcome to Introduction to Python! Here's an overview of the course.
Data Types and Operators	Familiarize yourself with the building blocks of Python! Learn about data types and operators, built-in functions, type conversion, whitespace, and style guidelines.
Data Structures	Use data structures to order and group different data types together! Learn about the types of data structures in Python, along with more useful built-in functions and operators.
Control Flow	Build logic into your code with control flow tools! Learn about conditional statements, repeating code with loops and useful built-in functions, and list comprehensions.
Functions	Learn how to use functions to improve and reuse your code! Learn about functions, variable scope, documentation, lambda expressions, iterators, and generators.
Scripting	Setup your own programming environment to write and run Python scripts locally! Learn good scripting practices, interact with different inputs, and discover awesome tools.
Intro to Object-Oriented Programming	

Part 3: Numpy, Pandas, Matplotlib

Let's focus on library packages for Python, such as : Numpy (which adds support for large data), Pandas (which is used for data manipulation and analysis) And Matplotlib (which is used for data visualization).

Learn the basics of the beautiful world of Linear Algebra and why it is such an important mathematical tool in the world of AI.

Part 5: Calculus Essentials

Part 6: Neural Networks

Part 7: Create Your Own Image Classifier

In the second and final project for this course, you'll build a state-of-the-art image classification application.

Project: Create Your Own Image Classifier

In this project, you'll build a Python application that can train an image classifier on a dataset, then predict new images using the trained model.

Part 8: Career Services

These Career Services will ensure you make meaningful connections with industry professionals to accelerate your career growth - whether looking for a job or opportunities to collaborate with your peers. Unlike your Nanodegree projects, you do not need to meet specifications on these Services to progress in your program. Submit these Career Services once, and get honest, personalized feedback and next steps from Udacity Career Coaches!

Project: Improve Your LinkedIn Profile

Find your next job or connect with industry peers on LinkedIn. Ensure your profile attracts relevant leads that will grow your professional network.

Supporting Lessons

Lesson	Summary
Industry Research	You're building your online presence. Now learn how to share your story, understand the tech landscape better, and meet industry professionals.

Project: Optimize Your GitHub Profile

Other professionals are collaborating on GitHub and growing their network. Submit your profile to ensure your profile is on par with leaders in your field.

Part 9: Next Steps!

Congratulations!!!!! You finished your first nanodegree in the School of AI! What are the next steps?



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