CMP-264: MACHINE LEARNING

Time Stamp:
Tue Jun 20 2023 14:52:50 GMT-0500 (CDT)

Approval Path

a. Fri, 25 Sep 2020 19:40:02 GMT
Colleen Bamford (cbamford): Approved for IT Chair
b. Mon, 28 Sep 2020 16:13:55 GMT
Kathleen Naasz (knaasz): Approved for BMET Dean
c. Tue, 06 Oct 2020 18:45:26 GMT
Janet Eber (jeber): Approved for Curriculum Committee Chair
d. Wed, 14 Oct 2020 18:11:18 GMT
Patrick Enright (penright): Approved for VPPSAS
e. Tue, 27 Oct 2020 12:52:28 GMT
Joanne Hugues (jhugues): Approved for College Council Chair
f. Sun, 29 Nov 2020 18:47:34 GMT
Shew-Mei Chen (schen): Approved for Academic Services (Datatel Entry)
g. Mon, 05 Apr 2021 13:22:13 GMT
magro: Approved for NJ CCC Course Review Committee Chair
h. Wed, 07 Apr 2021 08:25:44 GMT
system: Approved for Colleague

History

a. Apr 7, 2021 by Venny Fuentes (vfuentes)

New Course Proposal

Course Type:
Credit

Credit Type:
Institutional

Course Prefix:
CMP

Course Number:
264

Course Capacity:
20

General Education?
No

Department:
Information Technologies (IT)

Division:
School of Business, Mathematics, Engineering and Technologies

Course Title:
Machine Learning

Proposed Effective Date:
Fall 2020

Credit Hours:
Lecture: 1
Lab: 2
Recitation:
Clinical:
Cooperative:
Studio:
TOTAL: 3

Catalog Credits:
3

Course Fee:
Yes

Catalog Course Description:
This course provides a practical understanding and foundational principles of Machine Learning techniques. It offers the concepts, the intuitions, and the tools the students need to implement programs capable of learning from data. A large number of techniques are covered, from supervised learning algorithms, unsupervised learning algorithms to Deep Learning techniques and applications. The main goal of this course is to equip students with the skills to tackle real Machine Learning problems encountered in real life and business and establish a project portfolio.

Catalog Prerequisites:
MAT-114 AND CMP-131, OR Equivalent AND Department Permission

Crosslisted
Yes

Cross Listed Courses:

Code	Title
ENR-264	Machine Learning

Cross listed courses must have updated proposals

Textbooks:

Title	Ed	Author(s)	Publisher	ISBN	Req/Rec
1. Hands-On Machine Learning with Scikit-Learn and TensorFlow	Latest	Aurelien Geron	O'Reilly	978-1-491-96229-9	Required
2. Deep Learning	Latest	Goodfellow, Bengio, and Courville	deeplearningbook.org		Required

Supplemental Materials:
The Elements of Statistical Learning by Trevor Hastie, Robert Tibshirani, Jerome Friedman
Free Online https://web.stanford.edu/~hastie/ElemStatLearn/

Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations:
(Information will be used to determine differential funding category.)

Course will be utilizing the Lambda Blade (Server) with the Lambda Stack software. Needed for operations and courses using the GPU.

Course Content:

Topics
The Machine Learning Process
Model Training and Testing
Sci Kit Learn and Keras with a TensorFlow Backend Programming Libraries in Python
Traditional Machine Learning Algorithms, Techniques and Applications

Deep Neural Networks Techniques and Applications
Specialized Network Architectures

Statement of Course Learning Outcomes:

Learning Outcomes
Contrast the differences between various methodologies and best practices currently being used in Machine Learning
Develop programs using Machine Learning algorithms and pretrained models
Determine the different performance measures such as accuracy and recall for binary classification
Build, train and test neural networks
Explain the ethical issues related to Machine Learning techniques
Develop and implement an an array of programs that solve diverse applications using Machine Learning techniques
Assessment: Students will be assessed by projects, technical presentations and an exam

Statement of Relation to Curriculum(s):
This course will be part of the Data Analytics Certificate.

Format for offering the course:

(check all that apply)
Hybrid-Main Campus
On-Line
Traditional
Virtual Campus

Key: 10792