Sharing Teaching Experiences in EMI Courses and Project-based Learning (PBL)

2023/5/22 (Monday) 13:00 - 15:00
Host: Prof. Yu-Chin Liu
Information Management, College of Management, Shih Hsin University (SHU)
2F, No. 111, Muzha Road, Section 1, Wenshan District, Taipei, Taiwan

Min-Yuh Day, Ph.D,
Associate Professor

Institute of Information Management, National Taipei University
https://web.ntpu.edu.tw/~myday
戴敏育博士
Min-Yuh Day, Ph.D.

Associate Professor, Information Management, NTPU
Visiting Scholar, IIS, Academia Sinica
Ph.D., Information Management, NTU

Director, Intelligent Financial Innovation Technology, IFIT Lab, IM, NTPU
Associate Director, Fintech and Green Finance Center, NTPU

Publications Co-Chairs, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013- )
Publications Chair, The IEEE International Conference on Information Reuse and Integration for Data Science (IEEE IRI 2007- )
Generative AI and ChatGPT for ESG and Sustainable Development

Min-Yuh Day, Ph.D, Associate Professor
Institute of Information Management, National Taipei University

Time: 2023.04.27 (Thu) 12:10-13:30
Place: USR HUB, Office of Sustainability, NTPU
Host: Office of Sustainability, NTPU
https://forms.gle/vYVvYBT6y1ik4RtN7

https://web.ntpu.edu.tw/~myday
Outline

• EMI Teacher Community, AACSB, NTPU
• Teaching Experiences Sharing
• EMI Courses
• Project-based Learning (PBL)
EMI Teacher Community II
AACSB, NTPU

2022-2023
EMI Teacher Community Activities

1. 2022/05/05 (Thursday) 12:00 pm-13:00 pm, B302
   - Teaching Experiences Sharing of EMI Courses in AI for Business Applications
   - Min-Yuh Day, National Taipei University,

2. 2022/05/11 (Wednesday) 9:10 am - 12:00 pm, Google Meet ONLINE
   - Agile Principles Patterns and Practices in FinTech and Digital Transformation
   - Shihyu (Alex) Chu, Senior Industry Analyst/Program Manager, Market Intelligence & Consulting Institute (MIC)

3. 2022/05/11 (Wednesday) 12:10 pm - 13:00 pm, Google Meet ONLINE
   - Professional Business Presentations in English
   - Shihyu (Alex) Chu, Senior Industry Analyst/Program Manager, Market Intelligence & Consulting Institute (MIC)

4. 2022/05/18 (Wednesday) 12:10 pm - 13:00 pm, Google Meet ONLINE
   - Web 3: From DeFi to WoFi
   - Prof. Shih-wei Liao, National Taiwan University

5. 2022/05/27 (Friday) 12:00 pm - 13:00 pm, Google Meet ONLINE
   - Experiences Sharing of NTPU EMI Teaching Community II
   - Professors of EMI Teaching Community II, National Taipei University
Teaching Experiences Sharing of EMI Courses in AI for Business Applications

Min-Yuh Day, Ph.D,
Associate Professor

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

2022/5/5 (Thursday) 12:10 - 13:00
B302, AACSB, National Taipei University
Agile Principles Patterns and Practices in FinTech and Digital Transformation

Shihyu (Alex) Chu
Senior Industry Analyst/Program Manager
Market Intelligence & Consulting Institute (MIC)

9:10 - 12:00, May 11, 2022 (Wednesday)
Professional Business Presentations in English

Shihyu (Alex) Chu
Senior Industry Analyst/Program Manager
Market Intelligence & Consulting Institute (MIC)

12:10 - 13:00, May 11, 2022
(Wednesday)
Web 3: From DeFi to WoFi

Prof. Shih-wei Liao
National Taiwan University

12:10 - 13:00, May 18, 2022
(Wednesday)
Experiences Sharing of NTPU EMI Teaching Community II

Professors of EMI Teaching Community II
National Taipei University

12:00 - 13:00, May 27, 2022
(Friday)
FinTech for Social Good

Dr. Chung-Chi Chen
Researcher,
Artificial Intelligence Research Center,
National Institute of Advanced Industrial Science and Technology,
Japan

12:10 - 14:00, Oct. 19, 2022
(Wednesday)
Matching Texts with Data for Evidence-based Information Retrieval

Prof. Makoto P. Kato
Faculty of Library, Information and Media Science
University of Tsukuba, Japan

9:10 - 12:00, Nov. 23, 2022
(Wednesday)
(Hybrid) B8F40, National Taipei University, Taiwan

https://meet.google.com/miy-fbif-max
The Truth of Crypto & NFT Economy
(虛擬貨幣與NFT經濟老實說)

Mu Jou (周書丞)
CTO of Infinitas NFT
GM of Asiania
12:10 - 14:00, Nov. 30, 2022
(Wednesday)
(Hybrid) B3F02, National Taipei University, Taiwan
Index Design – Methodology, Data Analysis and the Application of Quantitative Investing

Jervis J.G. Li
Fund Manager, Yuanta SITC

9:10 - 12:00, Dec. 6, 2022 (Tuesday)
(Hybrid) B8F40, National Taipei University, Taiwan

https://meet.google.com/paj-zhhj-mya
Agile Principles Patterns and Practices using AI and ChatGPT

Shihyu (Alex) Chu
Division Director, Software Industry Research Market Intelligence & Consulting Institute (MIC)

9:10 - 12:00, May 17, 2023
(Wednesday)
(Hybrid) B8F40, National Taipei University, Taiwan
EMI x USR x FinTech x IM
AACSB NTPU

International Carbon Neutral Industry Trends and Digital Transformation for Sustainable Development

Shihyu (Alex) Chu (朱師右)
Division Director, Software Industry Research Market Intelligence & Consulting Institute (MIC)

12:10 - 13:00, May 17, 2023
(Wednesday)
(Hybrid) B302, National Taipei University, Taiwan
Teaching Experiences
Sharing
Teaching Experiences (EMI)

- Artificial Intelligence for Text Analytics
  - Spring 2022

- Software Engineering
  - Fall 2020, Fall 2021, Spring 2022, Spring 2023

- Artificial Intelligence in Finance and Quantitative
  - Fall 2021, Fall 2022

- Artificial Intelligence
  - Spring 2021, Fall 2022

- Data Mining
  - Spring 2021

- Big Data Analytics
  - Fall 2020, Spring 2023

- Foundation of Business Cloud Computing
  - Spring 2021, Spring 2022, Spring 2023

https://web.ntpu.edu.tw/~myday/teaching.htm
Teaching Experiences (EMI)

• **AI in Finance Big Data Analytics (Fall 2019)**
  - MBA, DBETKU (3 Credits, Elective) [Full English Course] [Distance Learning]

• **Big Data Mining (Fall 2018)**
  - MBA, DBETKU (3 Credits, Required) [Full English Course]

• **Social Media Apps Programming (Fall 2013 - Fall 2018)**
  - MBA, IMTKU (2 Credits, Elective) [Full English Course]
  - Fall 2018, Fall 2017, Fall 2016, Fall 2015, Fall 2014, Fall 2013

https://web.ntpu.edu.tw/~myday/teaching.htm
EMI Courses in AI for Business Applications
EMI Courses in AI for Business Applications

- Big Data Analysis
  - Spring 2023
- Software Engineering
  - Spring 2023, Spring 2022
- Artificial Intelligence
  - Fall 2022
- Artificial Intelligence in Finance and Quantitative Analysis
  - Fall 2022
- Artificial Intelligence for Text Analytics
  - Spring 2022

https://web.ntpu.edu.tw/~myday/teaching.htm
Introduction to Big Data Analysis

Min-Yuh Day, Ph.D, Associate Professor
Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

1112BDA01
MBA, IM, NTPU (M6031) (Spring 2023)
Tue 2, 3, 4 (9:10-12:00) (B8F40)

https://meet.google.com/paj-zhhj-my
Course Syllabus
National Taipei University
Academic Year 111, 2\textsuperscript{nd} Semester (Spring 2023)

• Course Title: Big Data Analysis
• Instructor: Min-Yuh Day
• Course Class: MBA, IM, NTPU (3 Credits, Elective)
• Details
  • In-Class and Distance Learning EMI Course
    (3 Credits, Elective, One Semester) (M6031)
• Time & Place: Tue, 2, 3, 4, (9:10-12:00) (B8F40)
• Google Meet: https://meet.google.com/paj-zhhj-mya
Course Objectives

1. Understand the fundamental concepts and research issues of Big Data Analysis.
2. Equip with Hands-on practices of Big Data Analysis.
3. Conduct information systems research in the context of Big Data Analysis.
Course Outline

• This course introduces the **fundamental concepts, research issues, and hands-on practices of Big Data Analysis**.

• Topics include:
  1. Introduction to Big Data Analysis
  2. AI, Data Science and Big Data Analysis
  3. Foundations of Big Data Analysis in Python
  5. Machine Learning: Decision Trees and Ensembles of Trees
  6. Machine Learning: Neural Networks (NN) and Support Vector Machines (SVM)
  7. Machine Learning: Model Assessment and Deployment
  8. ChatGPT and Large Language Models (LLM) for Big Data Analysis
  9. Deep Learning for Finance Big Data Analysis
  10. Case Study on Big Data Analysis
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2023/02/21</td>
<td>Introduction to Big Data Analysis</td>
</tr>
<tr>
<td>2</td>
<td>2023/02/28</td>
<td>(Day Off)</td>
</tr>
<tr>
<td>3</td>
<td>2023/03/07</td>
<td>AI, Data Science and Big Data Analysis</td>
</tr>
<tr>
<td>4</td>
<td>2023/03/14</td>
<td>Foundations of Big Data Analysis in Python</td>
</tr>
<tr>
<td>5</td>
<td>2023/03/21</td>
<td>Case Study on Big Data Analysis I</td>
</tr>
<tr>
<td>6</td>
<td>2023/03/28</td>
<td>Machine Learning: SAS Viya, Data Preparation and Algorithm Selection</td>
</tr>
</tbody>
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### Syllabus

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
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<tbody>
<tr>
<td>7</td>
<td>2023/04/04</td>
<td>(Children's Day) (Day off)</td>
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<td>8</td>
<td>2023/04/11</td>
<td>Midterm Project Report</td>
</tr>
<tr>
<td>9</td>
<td>2023/04/18</td>
<td>Machine Learning: Decision Trees and Ensembles of Trees</td>
</tr>
<tr>
<td>10</td>
<td>2023/04/25</td>
<td>Machine Learning: Neural Networks (NN) and Support Vector Machines (SVM)</td>
</tr>
<tr>
<td>11</td>
<td>2023/05/02</td>
<td>Case Study on Big Data Analysis II</td>
</tr>
<tr>
<td>12</td>
<td>2023/05/09</td>
<td>Machine Learning: Model Assessment and Deployment</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
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</tr>
<tr>
<td>13</td>
<td>2023/05/16</td>
<td>ChatGPT and Large Language Models (LLM) for Big Data Analysis</td>
</tr>
<tr>
<td>14</td>
<td>2023/05/23</td>
<td>Deep Learning for Finance Big Data Analysis</td>
</tr>
<tr>
<td>15</td>
<td>2023/05/30</td>
<td>Final Project Report I</td>
</tr>
<tr>
<td>16</td>
<td>2023/06/06</td>
<td>Final Project Report II</td>
</tr>
<tr>
<td>17</td>
<td>2023/06/13</td>
<td>Self-learning</td>
</tr>
<tr>
<td>18</td>
<td>2023/06/20</td>
<td>Self-learning</td>
</tr>
</tbody>
</table>
Teaching Methods and Activities

- Lecture
- Discussion
- Practicum
Evaluation Methods

• Individual Presentation 60 %
• Group Presentation 10 %
• Case Report 10 %
• Class Participation 10 %
• Assignment 10 %
Software Engineering

Introduction to Software Engineering

Min-Yuh Day, Ph.D,
Associate Professor

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday
Course Syllabus
National Taipei University
Academic Year 111, 2\textsuperscript{nd} Semester (Spring 2023)

• Course Title: \textit{Software Engineering}
• Instructor: Min-Yuh Day
• Course Class: MBA, IM, NTPU (3 Credits, Elective)
• Details
  • In-Person and Distance Learning EMI Course
    (3 Credits, Elective, One Semester) (M5010)
• Time & Place: Wed, 2, 3, 4, (9:10-12:00) (B8F40)
• Google Meet: \url{https://meet.google.com/ish-gzmy-pmo}
Course Objectives

1. Understand the fundamental concepts and research issues of software engineering.
2. Equip with Hands-on practices of software engineering.
3. Conduct information systems research in the context of software engineering.
Course Outline

• This course introduces the fundamental concepts, research issues, and hands-on practices of software engineering.

• Topics include:
  1. Introduction to Software Engineering
  2. Software Products and Project Management: Software product management and prototyping
  3. Agile Software Engineering: Agile methods, Scrum, and Extreme Programming
  4. Features, Scenarios, and Stories
  5. Software Architecture: Architectural design, System decomposition, and Distribution architecture
  6. Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service
  7. Cloud Computing and Cloud Software Architecture
  8. Microservices Architecture, RESTful services, Service deployment
  9. Security and Privacy; Reliable Programming
  10. Testing: Functional testing, Test automation, Test-driven development, and Code reviews
  11. DevOps and Code Management: Code management and DevOps automation
  12. Case Study on Software Engineering
# Syllabus

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2023/02/22</td>
<td><strong>Introduction to Software Engineering</strong></td>
</tr>
<tr>
<td>2</td>
<td>2023/03/01</td>
<td><strong>Software Products and Project Management:</strong> Software product management and prototyping</td>
</tr>
<tr>
<td>3</td>
<td>2023/03/08</td>
<td><strong>Agile Software Engineering:</strong> Agile methods, Scrum, and Extreme Programming</td>
</tr>
<tr>
<td>4</td>
<td>2023/03/15</td>
<td><strong>Features, Scenarios, and Stories</strong></td>
</tr>
<tr>
<td>5</td>
<td>2023/03/22</td>
<td><strong>Case Study on Software Engineering I</strong></td>
</tr>
<tr>
<td>6</td>
<td>2023/03/29</td>
<td><strong>Software Architecture:</strong> Architectural design, System decomposition, and Distribution architecture</td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
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</tr>
<tr>
<td>7</td>
<td>2023/04/05</td>
<td>Tomb-Sweeping Day (Holiday, No Classes)</td>
</tr>
<tr>
<td>8</td>
<td>2023/04/12</td>
<td>Midterm Project Report</td>
</tr>
<tr>
<td>9</td>
<td>2023/04/19</td>
<td>Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service</td>
</tr>
<tr>
<td>10</td>
<td>2023/04/26</td>
<td>Cloud Computing and Cloud Software Architecture</td>
</tr>
<tr>
<td>11</td>
<td>2023/05/03</td>
<td>Microservices Architecture, RESTful services, Service deployment</td>
</tr>
<tr>
<td>12</td>
<td>2023/05/10</td>
<td>Security and Privacy; Reliable Programming; Testing: Test-driven development, and Code reviews; DevOps and Code Management: DevOps automation</td>
</tr>
</tbody>
</table>
## Syllabus

<table>
<thead>
<tr>
<th>Week</th>
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<th>Subject/Topics</th>
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</thead>
<tbody>
<tr>
<td>13</td>
<td>2023/05/17</td>
<td>Industry Practices of Software Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Agile Principles Patterns and Practices using AI and ChatGPT, Invited Speaker: Shihyu (Alex) Chu, Division Director, Software Industry Research Center, Market Intelligence &amp; Consulting Institute (MIC)]</td>
</tr>
<tr>
<td>14</td>
<td>2023/05/24</td>
<td>Case Study on Software Engineering II</td>
</tr>
<tr>
<td>15</td>
<td>2023/05/31</td>
<td>Final Project Report I</td>
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<tr>
<td>16</td>
<td>2023/06/07</td>
<td>Final Project Report II</td>
</tr>
<tr>
<td>17</td>
<td>2023/06/14</td>
<td>Self-learning</td>
</tr>
<tr>
<td>18</td>
<td>2023/06/21</td>
<td>Self-learning</td>
</tr>
</tbody>
</table>
Introduction to Artificial Intelligence in Finance and Quantitative Analysis

Min-Yuh Day, Ph.D,
Associate Professor

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

1111AIFQA01
MBA, IM, NTPU (M6132) (Fall 2022)
Tue 2, 3, 4 (9:10-12:00) (B8F40)

https://meet.google.com/paj-zhhj-mya
Course Syllabus
National Taipei University
Academic Year 111, 1st Semester (Fall 2022)

• Course Title: Artificial Intelligence in Finance and Quantitative Analysis
• Instructor: Min-Yuh Day
• Course Class: MBA, IM, NTPU (3 Credits, Elective)
• Details
  • In-Class and Distance Learning EMI Course (3 Credits, Elective, One Semester) (M6132)
• Time & Place: Tue, 2, 3, 4, (9:10-12:00) (B8F40)
• Google Meet: https://meet.google.com/paj-zhhj-mya
Course Objectives

1. Understand the fundamental concepts and research issues of Artificial Intelligence in Finance and Quantitative Analysis.

2. Equip with Hands-on practices of Artificial Intelligence in Finance and Quantitative Analysis.

3. Conduct information systems research in the context of Artificial Intelligence in Finance and Quantitative Analysis.
Course Outline

• This course introduces the fundamental concepts, research issues, and hands-on practices of AI in Finance and Quantitative Analysis.
• Topics include:
  1. Introduction to Artificial Intelligence in Finance and Quantitative Analysis
  2. AI in FinTech: Metaverse, Web3, DeFi, NFT, Financial Services Innovation and Applications
  3. Investing Psychology and Behavioral Finance
  4. Event Studies in Finance
  5. Finance Theory
  6. Data-Driven Finance
  7. Financial Econometrics
  8. AI-First Finance
  9. Deep Learning in Finance
  10. Reinforcement Learning in Finance
  11. Algorithmic Trading, Risk Management, Trading Bot and Event-Based Backtesting
  12. Case Study on AI in Finance and Quantitative Analysis.
<table>
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<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2022/09/13</td>
<td>Introduction to Artificial Intelligence in Finance and Quantitative Analysis</td>
</tr>
<tr>
<td>2</td>
<td>2022/09/20</td>
<td>AI in FinTech: Metaverse, Web3, DeFi, NFT, Financial Services Innovation and Applications</td>
</tr>
<tr>
<td>3</td>
<td>2022/09/27</td>
<td>Investing Psychology and Behavioral Finance</td>
</tr>
<tr>
<td>4</td>
<td>2022/10/04</td>
<td>Event Studies in Finance</td>
</tr>
<tr>
<td>5</td>
<td>2022/10/11</td>
<td>Case Study on AI in Finance and Quantitative Analysis I</td>
</tr>
<tr>
<td>6</td>
<td>2022/10/18</td>
<td>Finance Theory</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
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</tr>
<tr>
<td>7</td>
<td>2022/10/25</td>
<td>Data-Driven Finance</td>
</tr>
<tr>
<td>8</td>
<td>2022/11/01</td>
<td>Midterm Project Report</td>
</tr>
<tr>
<td>9</td>
<td>2022/11/08</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>10</td>
<td>2022/11/15</td>
<td>AI-First Finance</td>
</tr>
<tr>
<td>11</td>
<td>2022/11/22</td>
<td>Industry Practices of AI in Finance and Quantitative Analysis</td>
</tr>
<tr>
<td>12</td>
<td>2022/11/29</td>
<td>Case Study on AI in Finance and Quantitative Analysis II</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
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<tr>
<td>13</td>
<td>2022/12/06</td>
<td>Deep Learning in Finance; Reinforcement Learning in Finance</td>
</tr>
<tr>
<td>14</td>
<td>2022/12/13</td>
<td>Algorithmic Trading; Risk Management; Trading Bot and Event-Based Backtesting</td>
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<td>15</td>
<td>2022/12/20</td>
<td>Final Project Report I</td>
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<td>16</td>
<td>2022/12/27</td>
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<td>Self-learning</td>
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<td>2023/01/10</td>
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</tbody>
</table>
Artificial Intelligence

Introduction to Artificial Intelligence

Min-Yuh Day, Ph.D, Associate Professor

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

1111AI01
MBA, IM, NTPU (M6132) (Fall 2022)
Wed 2, 3, 4 (9:10-12:00) (B8F40)

https://meet.google.com/miy-fbif-max
Course Syllabus
National Taipei University
Academic Year 111, 1st Semester (Fall 2022)

• Course Title: Artificial Intelligence
• Instructor: Min-Yuh Day
• Course Class: MBA, IM, NTPU (3 Credits, Elective)
• Details
  • In-Class and Distance Learning EMI Course (3 Credits, Elective, One Semester) (M6132)
• Time & Place: Wed, 2, 3, 4, (9:10-12:00) (B8F40)
• Google Meet: https://meet.google.com/miy-fbif-max

https://meet.google.com/miy-fbif-max
Course Objectives

1. Understand the fundamental concepts and research issues of Artificial Intelligence.
2. Equip with Hands-on practices of Artificial Intelligence.
3. Conduct information systems research in the context of Artificial Intelligence.
Course Outline

• This course introduces the fundamental concepts, research issues, and hands-on practices of Artificial Intelligence.

• Topics include:

  1. Introduction to Artificial Intelligence
  2. Artificial Intelligence and Intelligent Agents
  3. Problem Solving
  4. Knowledge, Reasoning and Knowledge Representation, Uncertain Knowledge and Reasoning
  5. Machine Learning: Supervised and Unsupervised Learning
  6. The Theory of Learning and Ensemble Learning
  7. Deep Learning, Reinforcement Learning
  8. Deep Learning for Natural Language Processing
  9. Computer Vision and Robotics
  10. Philosophy and Ethics of AI and the Future of AI
  11. Case Study on AI
<table>
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<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
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<td>1</td>
<td>2022/09/14</td>
<td>Introduction to Artificial Intelligence</td>
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<tr>
<td>2</td>
<td>2022/09/21</td>
<td>Artificial Intelligence and Intelligent Agents</td>
</tr>
<tr>
<td>3</td>
<td>2022/09/28</td>
<td>Problem Solving</td>
</tr>
<tr>
<td>4</td>
<td>2022/10/05</td>
<td>Knowledge, Reasoning and Knowledge Representation; Uncertain Knowledge and Reasoning</td>
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<tr>
<td>5</td>
<td>2022/10/12</td>
<td>Case Study on Artificial Intelligence I</td>
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<tr>
<td>6</td>
<td>2022/10/19</td>
<td>Machine Learning: Supervised and Unsupervised Learning</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
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<tr>
<td>7</td>
<td>2022/10/26</td>
<td>The Theory of Learning and Ensemble Learning</td>
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<tr>
<td>8</td>
<td>2022/11/02</td>
<td>Midterm Project Report</td>
</tr>
<tr>
<td>9</td>
<td>2022/11/09</td>
<td>Deep Learning and Reinforcement Learning</td>
</tr>
<tr>
<td>10</td>
<td>2022/11/16</td>
<td>Deep Learning for Natural Language Processing</td>
</tr>
<tr>
<td>11</td>
<td>2022/11/23</td>
<td>Invited Talk: AI for Information Retrieval</td>
</tr>
<tr>
<td>12</td>
<td>2022/11/30</td>
<td>Case Study on Artificial Intelligence II</td>
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</table>
# Syllabus

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
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<tbody>
<tr>
<td>13</td>
<td>2022/12/07</td>
<td>Computer Vision and Robotics</td>
</tr>
<tr>
<td>14</td>
<td>2022/12/14</td>
<td>Philosophy and Ethics of AI and the Future of AI</td>
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<td>15</td>
<td>2022/12/21</td>
<td>Final Project Report I</td>
</tr>
<tr>
<td>16</td>
<td>2022/12/28</td>
<td>Final Project Report II</td>
</tr>
<tr>
<td>17</td>
<td>2023/01/04</td>
<td>Self-learning</td>
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<tr>
<td>18</td>
<td>2023/01/11</td>
<td>Self-learning</td>
</tr>
</tbody>
</table>
Introduction to Artificial Intelligence for Text Analytics

Min-Yuh Day, Ph.D, Associate Professor
Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

https://meet.google.com/paj-zhhj-mya

1102AITA01
MBA, IM, NTPU (M5026) (Spring 2022)
Tue 2, 3, 4 (9:10-12:00) (B8F40)
Course Syllabus
National Taipei University
Academic Year 110, 2\textsuperscript{nd} Semester (Spring 2022)

• Course Title: \textbf{Artificial Intelligence for Text Analytics}
• Instructor: Min-Yuh Day
• Course Class: MBA, IM, NTPU (3 Credits, Elective)
• Details
  • In-Class and Distance Learning EMI Course
    (3 Credits, Elective, One Semester) (M5026)
• Time & Place: Tue, 2, 3, 4, (9:10-12:00) (B8F40)
• Google Meet: \url{https://meet.google.com/paj-zhhj-mya}
Course Objectives

1. Understand the fundamental concepts and research issues of Artificial Intelligence for Text Analytics.

2. Equip with Hands-on practices of Artificial Intelligence for Text Analytics.

3. Conduct information systems research in the context of Artificial Intelligence for Text Analytics.
Course Outline

• This course introduces the fundamental concepts, research issues, and hands-on practices of Artificial Intelligence for Text Analytics.

• Topics include:
  1. Introduction to Artificial Intelligence for Text Analytics
  2. Foundations of Text Analytics: Natural Language Processing (NLP)
  3. Python for Natural Language Processing
  4. Natural Language Processing with Transformers
  5. Text Classification and Sentiment Analysis
  6. Multilingual Named Entity Recognition (NER), Text Similarity and Clustering
  7. Text Summarization and Topic Models
  8. Text Generation
  9. Question Answering and Dialogue Systems
  10. Deep Learning, Transfer Learning, Zero-Shot, and Few-Shot Learning for Text Analytics
  11. Case Study on Artificial Intelligence for Text Analytics
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>2022/02/22</td>
<td>Introduction to Artificial Intelligence for Text Analytics</td>
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<tr>
<td>2</td>
<td>2022/03/01</td>
<td>Foundations of Text Analytics: Natural Language Processing (NLP)</td>
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<td>3</td>
<td>2022/03/08</td>
<td>Python for Natural Language Processing</td>
</tr>
<tr>
<td>4</td>
<td>2022/03/15</td>
<td>Natural Language Processing with Transformers</td>
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<tr>
<td>5</td>
<td>2022/03/22</td>
<td>Case Study on Artificial Intelligence for Text Analytics I</td>
</tr>
<tr>
<td>6</td>
<td>2022/03/29</td>
<td>Text Classification and Sentiment Analysis</td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Subject/Topics</td>
</tr>
<tr>
<td>------</td>
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<td>-------------------------------------------------------------------------------</td>
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<tr>
<td>7</td>
<td>2022/04/05</td>
<td>Tomb-Sweeping Day (Holiday, No Classes)</td>
</tr>
<tr>
<td>8</td>
<td>2022/04/12</td>
<td>Midterm Project Report</td>
</tr>
<tr>
<td>9</td>
<td>2022/04/19</td>
<td>Multilingual Named Entity Recognition (NER), Text Similarity and Clustering</td>
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<tr>
<td>10</td>
<td>2022/04/26</td>
<td>Text Summarization and Topic Models</td>
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<tr>
<td>11</td>
<td>2022/05/03</td>
<td>Text Generation</td>
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<tr>
<td>12</td>
<td>2022/05/10</td>
<td>Case Study on Artificial Intelligence for Text Analytics II</td>
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<tr>
<td>Week</td>
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<td>Subject/Topics</td>
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<td>------</td>
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<td>2022/06/21</td>
<td>Self-learning</td>
</tr>
</tbody>
</table>
Project-based Learning (PBL)
PBL
Design
Teaching

Gold Standard PBL

Seven Essential Project Design Elements

1. Sustained Inquiry
2. Authenticity
3. Stewardship
4. Student Voice & Choice
5. Reflection
6. Critique & Revision
7. Public Product

LEARNING GOALS
- Key Knowledge
- Understanding
- Success Skills

Source: https://www.pblworks.org/what-is-pbl
Information Management (MIS)
Information Systems

Fundamental MIS Concepts

Agile Software Engineering
Software Engineering and Project Management

- **Analyze**: Requirements definition
- **Design**: System and Software design
- **Build**: Implementation and unit testing
- **Test**: Integration and system testing
- **Deliver**: Operation and maintenance

Project Management
Software Development Life Cycle (SDLC)
The waterfall model

1. Requirements definition
2. System and Software design
3. Implementation and unit testing
4. Integration and system testing
5. Operation and maintenance

Plan-based and Agile development

Plan-based development

- Requirements engineering
- Requirements specification
- Design and implementation

Requirements change requests

Agile development

- Requirements engineering
- Design and implementation

IMNTPU at the NTCIR-16 FinNum-3 Task: Data Augmentation for Financial Numclaim Classification

1 Information Management, National Taipei University, New Taipei City, Taiwan
2 Zeals Co., Ltd. Tokyo, Japan

Yung-Wei Teng 1
Pei-Tz Chiu 1
Ting-Yun Hsiao 1
Mike Tian-Jian Jiang 2
Min-Yuh Day 1,*

myday@gm.ntpu.edu.tw
IMNTPU Dialogue System Evaluation
at the NTCIR-16 DialEval-2
Dialogue Quality and Nugget Detection

1 Information Management, National Taipei University, New Taipei City, Taiwan
2 Zeals Co., Ltd. Tokyo, Japan

Ting-Yun Hsiao 1  Yung-Wei Teng 1  Pei-Tz Chiu 1  Mike Tian-Jian Jiang 2  Min-Yuh Day 1,*

myday@gm.ntpu.edu.tw
This paper provides a detailed description of IMNTPU team at the NTCIR-16 FinNum-3 shared task on formal financial documents. We proposed the use of the XLM-RoBERTa-based model with two different approaches on data augmentation to perform the binary classification task in FinNum-3. The first run (i.e., IMNTPU-1) is our baseline through the fine-tuning of the XLM-RoBERTa without data augmentation. However, we assume that presenting different data augmentations may improve the task performance because of the imbalance in the dataset. Accordingly, we presented double reduction and translation method on data augmentation in the second (IMNTPU-2) and third (IMNTPU-3) runs, respectively. The best macro-F1 scores obtained by our team in the Chinese and English datasets are 51.58 and 62.9%, respectively. The major contribution in this study provide a new understanding toward data augmentation approach for the imbalanced dataset, which may help reduce the imbalance situation in the Chinese and English datasets.

Research Architecture and Proposed Method

Data Augmentation

- Double Reduction
- Translation

Fine-tuning Baseline in IMNTPU

Pre-trained Model XLM-RoBERTa

IMNTPU-1: We adopted XLM-RoBERTa Model without data augmentation as our baseline.

IMNTPU-2: We adopt Double Reduction approach for data augmentation and XLM-RoBERTa Model.

IMNTPU-3: We adopt the Translation approach for data augmentation and XLM-RoBERTa Model.

Tokenization Tricks

Input: Good day and welcome to the Apple Inc. Third Quarter Fiscal Year 2018 Earnings Conference Call. Today’s call is being recorded.

XLM-RoBERTa Tokenizer

Output: <s> Good day and welcome to the Apple Inc. Third Quarter Fiscal Year 2018 Earnings Conference Call. Today’s call is being recorded. </s>

Algorithm of Double Reduction

1. Shuffle the tokens in sentence.
2. Define the duplicated tokens in sentence.
3. Copy the remaining tokens as 0.
4. Set the i and j.
5. If r is equal to 0 then.
6. Add the original tokens with each token.
7. Cover original tokens as <mask> tokens.
8. End if.
9. End for.
10. While True do.
11. Model predict the original tokens of each and <mask>.
12. End while.

Performance

<table>
<thead>
<tr>
<th>Chinese Dataset</th>
<th>English Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>Dev Set F1-Score (%)</td>
</tr>
<tr>
<td>IMNTPU-1</td>
<td>90.51</td>
</tr>
<tr>
<td>IMNTPU-2</td>
<td>88.65</td>
</tr>
<tr>
<td>IMNTPU-3</td>
<td>92.38</td>
</tr>
</tbody>
</table>

Conclusions and Contributions

Conclusions:

The performance with data augmentation method (Double Reduction) in English dataset is superior than without data augmentation.

Contributions:

- The major contribution of the research is that data augmentation approach may help reduce imbalance situation.
- We have developed a novel method for data augmentation technique, which is double reduction and translation approach, and can decrease the issue of imbalanced dataset.

Acknowledgements

This research was supported in part by the Ministry of Science and Technology (MOST), Taiwan under grant number 105-2221-E-002-055-MY3 and National Taiwan University (NTU) under grant number 105-TRP-P3. We would like to thank all the participants of the shared task and reviewers for their valuable feedback.

Yung-Wei Teng, Pei-Ts Chiu, Ting-Yun Hsiao, Mike Tian-Jian Jiang, and Min-Yuh Day
In conjunction with IEEE IRI 2023
August 4 - August 6, 2023
Bellevue, WA, USA

• IMPORTANT DATES
• Regular paper submission: May 15, 2023
• Notification of acceptance: June 12, 2023
• Camera-ready paper due: June 26, 2023
• Author registration due: July 3, 2023
• Conference events: August 4 - August 6, 2023

https://sites.google.com/view/emrite2023
The 14th International Workshop on Mining and Analyzing Social Networks for Decision Support (MSNDS 2023)
In conjunction with IEEE/ACM ASONAM 2023
Marrakesh, Morocco
6-9 November 2023

• IMPORTANT DATES
  • Paper submission deadline: August 21, 2023
  • Acceptance notification: September 25, 2023
  • Camera-ready paper deadline: October 10, 2023
  • Author registration due: October 20, 2023
  • Conference events: November 10-13, 2023

https://sites.google.com/view/msnds2023
Acknowledgments: Research Projects

1. Applying AI technology to construct knowledge graphs of cryptocurrency anti-money laundering: a few-shot learning model
   • MOST, 110-2410-H-305-013-MY2, 2021/08/01~2023/07/31

2. Fintech Green Finance for Carbon Market Index, Corporate Finance, and Environmental Policies. Carbon Emission Sentiment Index with AI Text Analytics
   • NTPU, 112-NTPU_ORDA-F-003, 2023/01/01~2024/12/31

3. Research on speech processing, synthesis, recognition, and sentence construction of people with language disabilities. Multimodal Cross-lingual Task-Oriented Dialogue System
   • NTPU, 112-NTPU_ORDA-F-004, 2023/01/01~2025/12/31

4. Use deep learning to identify commercially dental implant systems - observational study
   • USTP-NTPU-TMU, USTP-NTPU-TMU-112-01, 2023/01/01~2023/12/31

5. Metaverse Avatar Automatic Metadata Generation Module
   • FormosaVerse x NTPU, NTPU-111A413E01, 2022/12/01~2023/11/30

6. Establishment and Implement of Smart Assistive Technology for Dementia Care and Its Socio-Economic Impacts. Intelligent, individualized and precise care with smart AT and system integration
   • MOST, 111-2627-M-038-001-, 2022/08/01~2023/07/31
Summary

• EMI Teacher Community, AACSB, NTPU
• Teaching Experiences Sharing
• EMI Courses
• Project-based Learning (PBL)
Q & A

Sharing Teaching Experiences in EMI Courses and Project-based Learning (PBL)

2023/5/22 (Monday) 13:00 - 15:00
Host: Prof. Yu-Chin Liu
Information Management, College of Management, Shih Hsin University (SHU)
2F, No. 111, Muzha Road, Section 1, Wenshan District, Taipei, Taiwan

Min-Yuh Day, Ph.D,
Associate Professor

Institute of Information Management, National Taipei University
https://web.ntpu.edu.tw/~myday