



Challenges and Opportunities in Integrating AI into Teaching and Learning

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- Introduction to AI
- Development of AI-based capstone design course
- Integrating AI tools in teaching



Introduction to AI



Inspirational quotes on artificial intelligence

4

- Quotes on artificial intelligence by the top leaders

“

A breakthrough in artificial intelligence would be worth ten Microsoft

- Bill Gates (CEO of Microsoft)



“

Artificial intelligence is probably the most important thing humanity has ever worked on

- Sundar Pichai (CEO of Google)



“

It is amazing that you could write a few lines of code and have it learned to do interesting things

- Andrew Ng (CEO of Landing AI)



Discussion

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- Do you think that artificial intelligence rules over human beings?



Debate on artificial intelligence

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- Jack Ma vs. Elon Musk



Elon Musk
(Space X)

Computers are already
smarter than people in so
many dimensions.



Jack Ma
(Alibaba)

Man can never make
another man. A computer
is just a computer.

Opportunities of artificial intelligence

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- Smart gating – American Airlines



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Risk of artificial intelligence

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- Dangers of artificial intelligence – Jeffry Hinton



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Development of AI-based capstone design course



Teaching goals

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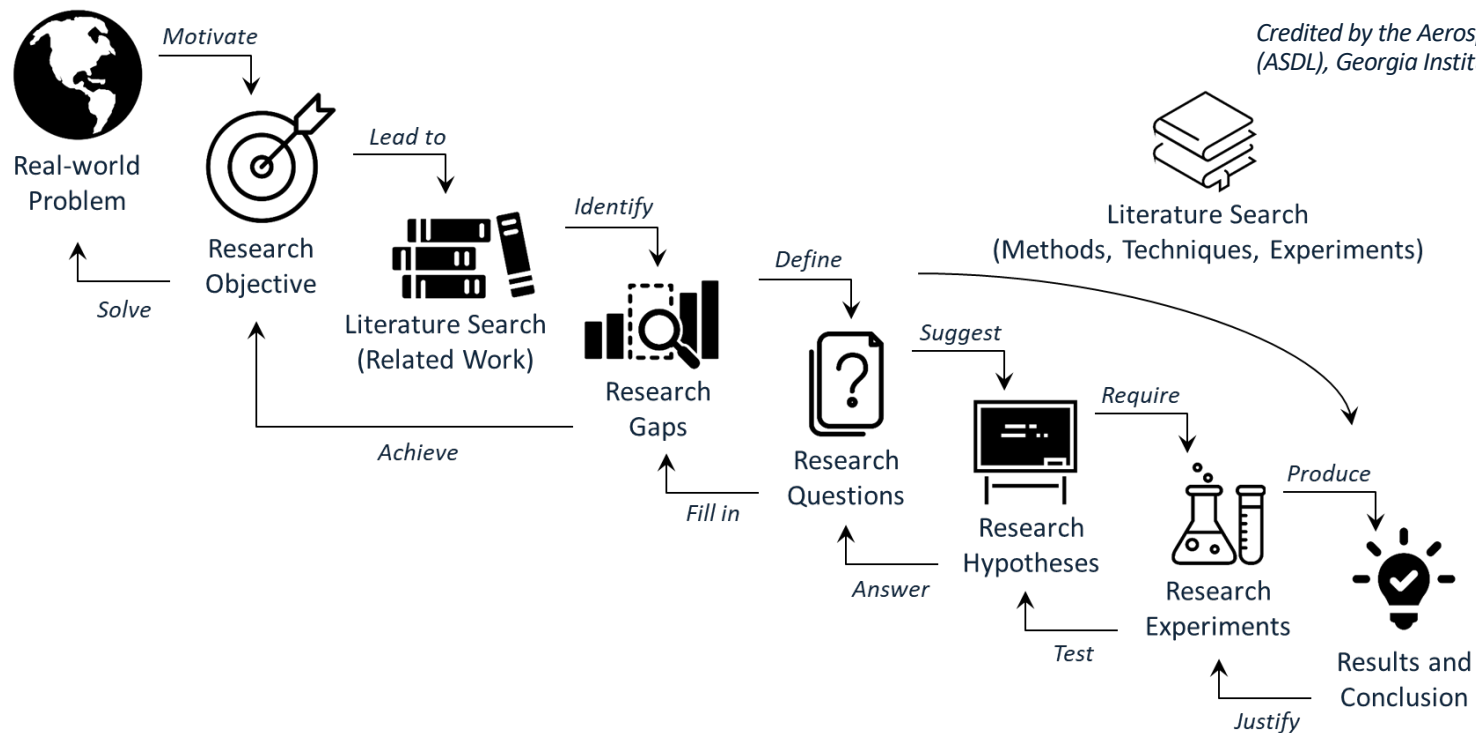
- **Goal 1.** Learn research process, scientific method, Heilmeyer questions, RCR, etiquette
- **Goal 2.** Enhance project-associated presentation/writing skills
- **Goal 3.** Develop problem solving, critical thinking, and managerial skills
- **Goal 4.** Explore a problem of interest



Teaching goal 1

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- **Goal 1.** Learn research process, ...
 - e.g., Decomposition and recomposition of the ASDL research process



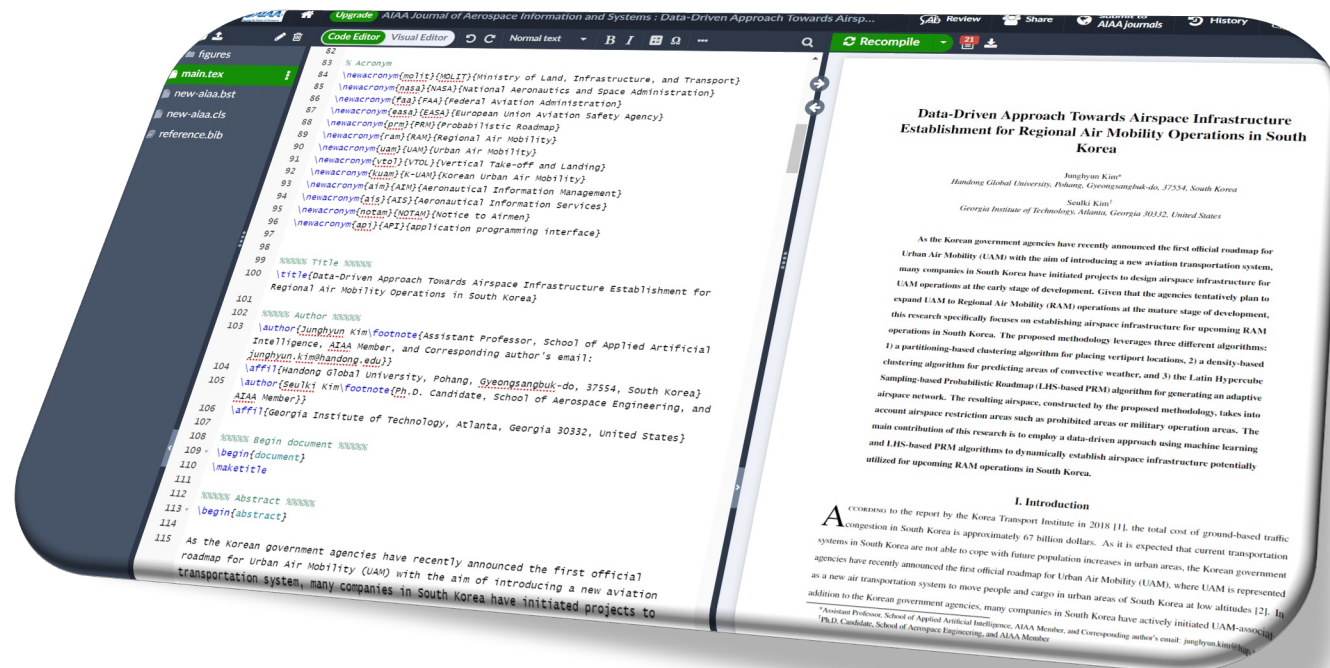
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Teaching goal 2

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- **Goal 2.** Enhance project-associated presentation/writing skills
 - e.g., Overleaf



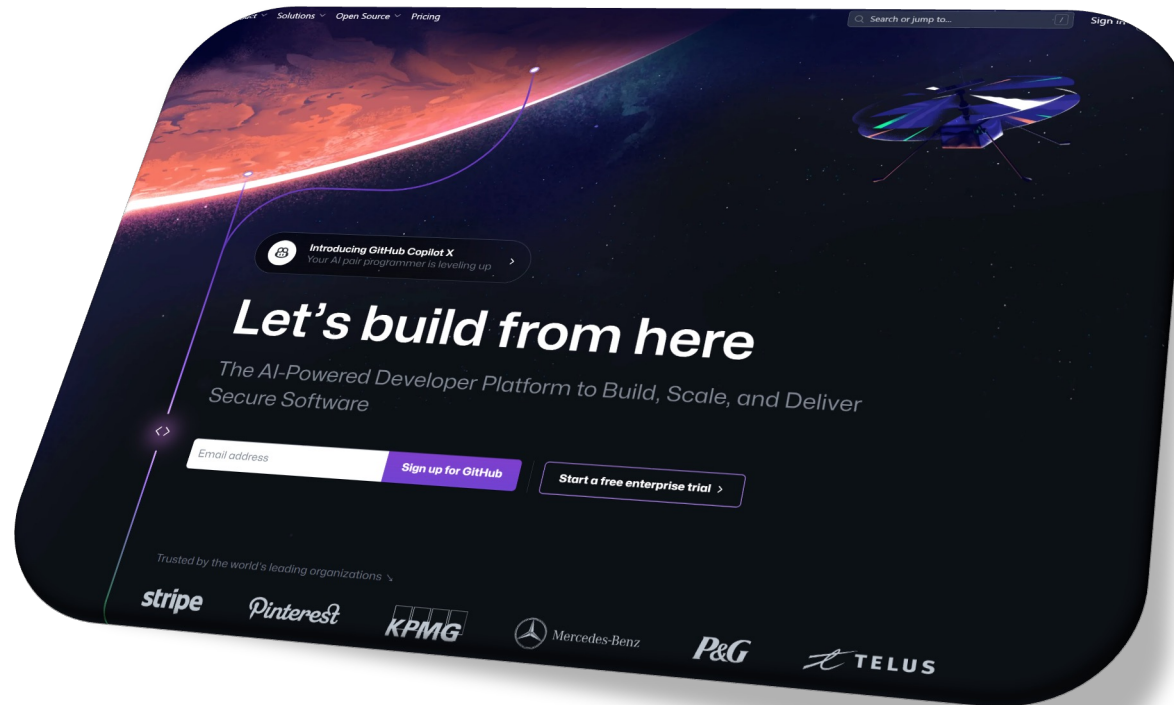
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Teaching goal 3

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- **Goal 3.** Develop project-related managerial skills
 - e.g., GitHub



<https://github.com/>

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Teaching goal 4

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- **Goal 4.** Develop problem-solving and critical-thinking skills by exploring open-ended, relevant, and realistic problems
 - e.g., Team project/presentation



Technical advisors

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- Invited four technical advisors from both academia and industry



Dr. Sungil Hong
*Post-doctoral Fellow, Georgia
Institute of Technology*



Prof. Taeil Kim
*Assistant Professor, Baylor
University*



Dr. Kisun Song
CEO, MAZE Inc.



Dr. Seulki Kim
*Ph.D. Candidate, Georgia
Institute of Technology*

Working groups

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- Invited three working groups from different industries



Kyungmin Ko
Senior Engineer, MAZE Inc.



Researchers, CJ Logistics



*Researchers, Mastern
Investment Management*

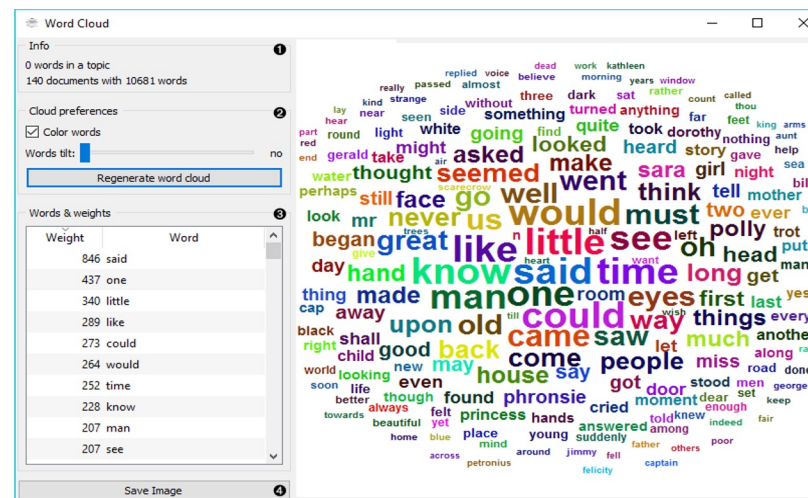
Integrating AI tools in teaching



Case 1

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- Title
 - Self-directed English learning project using AI – English writing activities through text mining
- Objective
 - Using AI tools (e.g., Orange 3), keywords can be extracted and visualized through text mining English data. You can use AI tools to write self-directed English writing. Also, you can identify your English learning type and develop your self-directed learning model



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Case 2

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- Title
 - Creating and singing a song that suits the class using generative AI tools
- Objective
 - Let students write down their desired song mood and gather the most common one. Use the ChatGPT to write a lyric and chord according to the mood (e.g., compose a joyful and lively school anthem-style melody that is suitable for singing at school)

```
mathematica Copy code

템포: 빠르게 (Tempo: Allegro)
조율: 행복한 (Key: C Major)

이미지: 학교에서 신나게 뛰면서 노래하는 모습

[반주]
C G Am F
C G Am F

[멜로디]
C G
1. 불금이 왔어 학교에
Am F
함께 뛰면서 노래 부를 때
C G
친구들과 함께한 순간
Am F
행복이 넘쳐 흐르네
```

```
makefile Copy code

X:1
T:School Joy
M:4/4
K:C
L:1/8

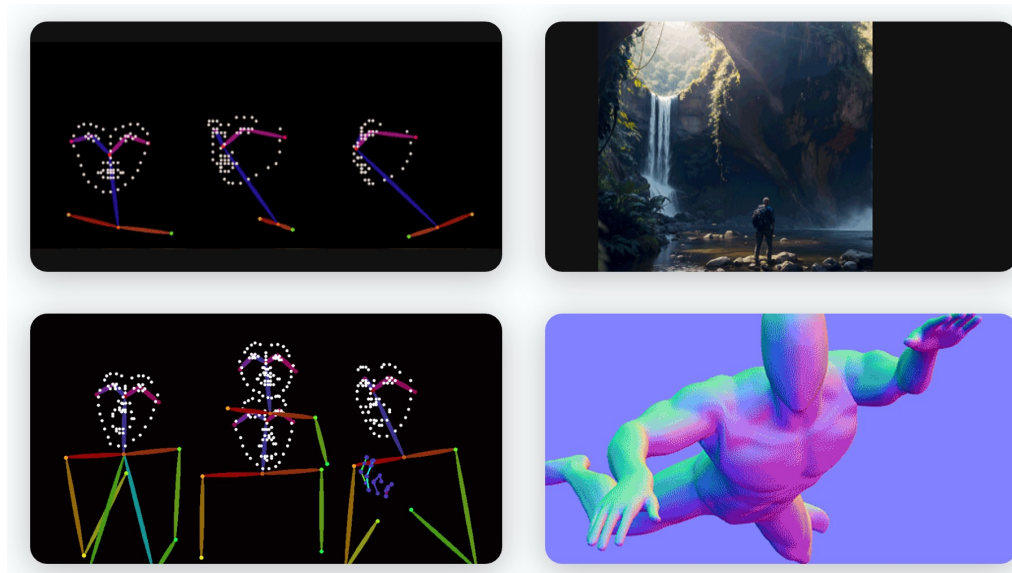
I "C"E2 G2 A2 F2 I "G"G2 E2 F2 D2 I "Am"E2 C2 E2 A2 I "F"F2 D2 F2 A2 I
I "C"E2 G2 A2 F2 I "G"G2 E2 F2 D2 I "Am"E2 C2 E2 A2 I "F"F2 D2 F2 A2 I
I "C"E2 C2 D2 E2 I "G"G2 E2 F2 D2 I "Am"E2 C2 E2 A2 I "F"F2 D2 F2 A2 I
I "C"E2 G2 A2 F2 I "G"G2 E2 F2 D2 I "Am"E2 C2 E2 A2 I "F"F2 D2 F2 A2 I
I "C"E2 G2 A2 F2 I "G"G2 E2 F2 D2 I "Am"E2 C2 E2 A2 I "F"F4 z2 I I
```



Case 3

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- Title
 - AI and arts using stable diffusion
- Objective
 - Using the stable diffusion to practice prompt-based engineering for the art design class



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THANK YOU

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