



BBA: Artificial Intelligence & Startups

Course Details


Course Title	Artificial Intelligence & Startups
Course Code	BBA
Credit Hours	3
Pre-requisites	N/A

Class Type	Days	Time	Room
Lecture	Tuesday & Thursday	2:30-4:00	TBA

Instructor

Instructor	Thomas Steinberger
Room	TBA
Consultation Hours	Thursday, 16:00 to 17:00
Email	tfs3@hotmail.com
Telephone	010-6474-7206

Mission Map

Mission Based Goals		Approximate % of Course Content	Approximate % of Assessment
Global Perspective		10%	10%
Asian Expertise		20%	10%
Creative Management Mind		30%	40%
Cross Cultural Competence		10%	10%
Social Responsibility		30%	30%
Total		100%	100%

SolBridge Mission & Course Objectives

The prime goal of the course is to deliver the promise of SolBridge. SolBridge has the mission of educating the next generation of Asian Thought leaders. The school aims to instill in our graduates a Global Perspective, Asian Expertise, a solid foundation in Management Knowledge, Cross Cultural Competence and a sense of social responsibility. This course aims to partially

fulfill the following elements of Solbridge Mission: Global Perspective, Asian Expertise, Creative Management Mind and Social Responsibility.

This course is about the process of designing a startup that uses Artificial Intelligence to drive value creation. The course will examine how AI startups manage the challenges of growing an AI system to achieve superior performance. Students will be equipped with conceptual and analytical tools needed for contemporary strategic analysis and formulation.

Tables 1 and 2 below outline the core and additional knowledge and skills (course contents) that would be acquired by students by the end of this course. Knowledge refers to an Understanding of Subject Matter, and Skills refer to practical use of the knowledge.

Table 1: Course Content - Core Knowledge & Skills

Knowledge	Skills
<p>1. Strategy, Artificial Intelligence and Competitive Advantage</p> <ul style="list-style-type: none"> • Concept of Artificial Intelligence in the Context of Startups • Measurement of Performance in AI Startups • Creating knowledge in AI startups • Monetization in AI startups • Relationship Between AI Startup Strategy and Competitive Advantage 	<p><i>Developing an AI Startup Strategy</i></p> <ul style="list-style-type: none"> • Developing a Business Model for an AI Startup • Assessing Short-term and Sustained Competitive Advantage in a Given AI Startup • Evaluating Flexibility in Strategic Posture in an AI Startup <p><i>Constructing Vision and Values</i></p> <ul style="list-style-type: none"> • Crafting Contextually Appropriate Vision, and Value Proposition for a Given AI Startup
<p>2. Basic Steps of Formulating an AI Knowledge Base</p> <ul style="list-style-type: none"> • Vision and Value Proposition at the systems-level, and their importance for AI startup strategy • Understanding Challenges of AI Knowledge Base Development and the Implications for use of Digital Technologies to Construct and Share Knowledge • Identification of Strategic Means for Controlling Quality in Knowledge Base Operations in AI Startups 	<p><i>Developing an AI Knowledge Base for a Startup</i></p> <ul style="list-style-type: none"> • Converting a Digital Dataset into a Knowledge Base for Value Creation • Identifying Near-term and Long-term Milestones for Managing Quality in AI Startup Operations • Strategically Designing Online Knowledge Bases and Organizational Learning Structures for AI Startups • Identifying and Devising Design Strategies to Develop Quality Control in AI Startups
<p>3. Governance: Assigning Credit to Users of an AI Startup</p> <ul style="list-style-type: none"> • Strategies for Rewarding User Contributions in AI Startups • Micropayments and other Monetization Techniques in AI Startups • Blockchain technologies • Contractual Strategies in AI Startups 	<p><i>Firm-Level Governance Strategy</i></p> <ul style="list-style-type: none"> • Choice of Credit Assignment Strategy in an AI Startup • Designing AI Monetization Rules while Identifying Critical Incentive Issues • Selecting or Innovating a Micropayments System based on Analysis of both Current and Historical Examples

<p>4. Growth Strategy</p> <ul style="list-style-type: none"> • Understanding Challenges in Scaling in AI Startups • Understanding importance of local knowledge creation in AI Startups • Implications of Variation in User Needs on Systems Design and Business Models in AI Startups <p>5. User-Centered Value Creation in an AI Startup</p> <ul style="list-style-type: none"> • Use of graphical design principles to develop products Linked to Value Creation Goals • Advantages & Disadvantages of Different Graphical Design Strategies <p>6. Product Design and Development in AI Startups</p> <ul style="list-style-type: none"> • Software development processes Distinct to AI Startups 	<p><i>Growth Strategy in AI Startups</i></p> <ul style="list-style-type: none"> • Choice of knowledge base goals and structure • Analyze Firm Context including financial implications and Determine the areas of Value Creation to invest in and the timeline for doing so • Identify Actions to be taken for Successful Growth of an AI Knowledge Base during Early, Mid and Mature Stages of an AI Startup • Analyze Firm Context to determine advisability and form of Strategic Alliance(s)
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Table 2: Course Content – Additional Knowledge & Skills

Knowledge	Skills
<p>7. Historical Roots of AI Systems</p> <ul style="list-style-type: none"> • Origins of AI in mid-20th century • Early use by businesses • Development of AI during the digital computing revolution, and its impact on technology startups 	<p><i>Long-Run Forces and Choice of AI Technologies in Startup Strategy</i></p> <ul style="list-style-type: none"> • Identification of Large-Scale Forces that Shape the Strategic Use of AI by Startups • Using historical context to reason about how current forces are likely to shape future developments in AI in the context of startups
<p>8. Business Model Design in AI Startups</p> <ul style="list-style-type: none"> • Using the business model design principles to create and iterate an AI startup strategy 	<p><i>Business Model Design</i></p> <ul style="list-style-type: none"> • Ability to Design a Business Model for an AI Startup and Present it in the Form of an Elevator Pitch
<p>9. Societal Context and AI Startup Strategy</p> <ul style="list-style-type: none"> • Role of local and national government institutions in shaping AI Startups’ strategies • Role of cultural institutions and norms in choice of AI strategy 	<p><i>Institutional Context</i></p> <ul style="list-style-type: none"> • Ability to identify and collect relevant information on government and non-government institutions for use in formulating an AI startup business model and growth strategy

Teaching Methodology

The Course will be taught as a design seminar, where students will be expected to form small groups and work together to build digital prototypes of a knowledge base for use by an AI

system and to layout a corresponding AI startup strategy (a pitch). A significant share of course time will be devoted to doing group work, and then presenting the group work to the class. In addition, the course will feature a lecture on core aspects of AI startups, mixing both concepts and case examples. The emphasis is on acquiring practical know-how as well as conceptual understanding. A high level of student involvement and creativity is expected.

Ethics

Plagiarism

SolBridge considers plagiarism as a serious breach of professional ethics. Plagiarism will not be tolerated in any form at SolBridge. Penalties can be as severe as expulsion from the university. To avoid plagiarism it always best to do your own work or cite the work of others appropriate. Refer to your student handbook for a more detailed description of plagiarism and the associated penalties.

In this class, the rules are:

1. The first instance of plagiarism will result in a “zero” for the assignment in question, and a report will be filed with disciplinary officer.
2. The second instance of plagiarism will result in a fail grade for the entire course, and a report will be filed with disciplinary officer.
3. The third instance will result in institutional-level disciplinary action which could include expulsion from the school.
4. The instructor will report each instance of plagiarism, academic dishonesty and violation of school disciplinary rules to the disciplinary officer.

Copying Textbooks, copyrighted materials and academic dishonesty

Copying Textbooks and other copyrighted materials without permission of publisher or author is tantamount to theft. Therefore, students are expected to purchase the prescribed books and other materials from the Woosong Bookstore.

- Students using copied versions of books without permission will be asked to leave the classroom.
- In addition, such students will get “zero” participation points and any other penalties as levied by the instructor.

Academic Dishonesty includes but not limited to: (a) cheating during examinations, (b) obtaining/ providing information for reports, assignments and examinations by fraudulent means, and (c) false representation of others’ effort as one’s own.

Some examples of academic dishonesty are: copying from other students during examinations; copying material from other students’ reports/ assignments and submitting the same as one’s own report; creating fictitious interview materials for assignments or reports.

Readings

The course will assign short readings and multimedia, to be chosen according to the progression of the course and the particular group of students. The course will *not* make use of a textbook.

Assessment Methods

Component	Weight	For Grading
1. Class Participation	20%	Attendance 20%
2. Quiz 1	10%	Midterm 20%
3. Quiz 2	10%	
4. Project – Development of a Knowledge Base for Use by an AI Startup	20%	Assignments 20%
5. Final Project	20%	20%
6. Final Exam (Essay)	20%	20%
Total	100%	100%

Class Participation (20%)

Class participation and attendance bears 20%. Now is the time to carefully note the points lost for each absence and its potential impact on your final grade.

Midterm (20%)

At the start of Week 6 and Week 23, a short quiz will be administered at the beginning of class regarding the basic concepts from the lecture part of the course.

Project (20%) & Final Project (20%)

The Class Project (weekly assignments + final project) will be the main assignment to be graded for the course. Although the final project will be due at the end of the course, it will be based on the accumulation of in-class assignments that are done throughout the course sessions. As such, the main separate tasks for the final project should focus on editing and integrating the outcomes of the group work done in class. Given this is the case, it is clearly important that everyone participates actively and creatively in the day-to-day group work activities.

Final Examination (20%)

The final examination will test your understanding of the core issues of designing and implementing a knowledge base for use by an AI startup and strategy that are covered in the group work and assignments for the course. As such, it will test the fundamental concepts covered in both the lectures and Class Project assignments.

Course Schedule

Week-Lec-Date	Topics & Readings	Remarks/Submissions
Part I: AI Background & Key Definitions in the Context of Startups		
Week I – Lec 1	Artificial Intelligence and Startups: Basic Concepts -What AI is for the purposes of the class, and why it matters for startups -Course structure and expectations	<i>Group Work:</i> Team Formation
Week I – Lec 2	Digital Knowledge Bases, AI and Startups -Technological mediums -Basic concepts of digital knowledge bases <u>Readings:</u> <i>Stephen Wolfram, 'Untangling the Tale of Ada Lovelace'</i>	<i>Group Work:</i> None
Part II: Setting Goals & Creating Knowledge in AI Startups		
Week II – Lec 3 & 4	Developing an AI Startup Idea -First principles thinking -Introduction to Class Project domain -Introduction to building a knowledge base for a startup: recent history -Knowledge bases and hierarchies -Class Project: Basic introduction and goals <u>Readings:</u> 1. Vannevar Bush, 'As We May Think' (PDF); 2. Douglas Engelbart, 'Bootstrapping Organizations' (PDF) 3. Reasoning with First Principles – Tesla & Netflix (CNBC) (video)	<i>Group Work:</i> None
Week III – Lec 5 & 6	Setting Performance Goals in an AI Startup -Desired behavior in AI startups -Expert systems, know-what and know-how -Introduction to Class Project database <u>Readings:</u> <i>None</i>	<i>Group Work:</i> Build a knowledge base for a sample piece of data

Week-Lec-Date	Topics & Readings	Remarks/Submissions
<p>Week IV – Lec 7 & 8</p>	<p>Knowledge Creation in AI Startups</p> <ul style="list-style-type: none"> -Principles of developing and abstracting knowledge about processes -Designing a base of predictive knowledge about business activities -Class project: techniques for sketching business activities and their underlying knowledge <p><u>Readings</u></p> <p>1. Gerald Sussman, <i>Introduction to Computation Lecture Notes (PDF)</i> and/or Lecture Video.</p>	<p><i>Group Work:</i> Begin building a knowledge base using a dataset</p>
<p>Week V – Lec 9 & 10</p>	<p>Growth Strategies in AI Startups</p> <ul style="list-style-type: none"> -Organizational structure when using AI -Problem identification: defining broad goals for value creation in an AI startup -Class project: connecting a knowledge base to value creation goals <p><u>Readings:</u></p> <p>None</p>	<p><i>Group Work:</i> Simplify a knowledge base and describe its goals for value creation</p>
Part III: Creating & Capturing Value in AI Startups		
<p>Week VI – Lec 11 & 12</p>	<p>QUIZ 1</p> <p>Values in AI Startups</p> <ul style="list-style-type: none"> -Linking value creation to core values -Articulation of the business uses of a knowledge base -Social dangers of AI startups <p><u>Readings:</u></p> <p>1. Neil Postman, <i>'Five Things We Need to Know about Technological Change'</i> (PDF)</p> <p>2. Are Sportswriters Really Necessary? (Business Week)</p> <p>3. EM Forster, <i>'The Machine Stops'</i> (PDF).</p>	<p><i>Group Work:</i> Express knowledge base goals in terms of a business use</p>
<p>Week VII – Lec 13 & 14</p>	<p>Growing a Knowledge Base</p> <ul style="list-style-type: none"> -Designing a knowledge base to scale -Creating value through search functions -Class Project: design challenges in constructing a digital knowledge base <p><u>Readings:</u></p> <p>1. 'The Socialist Origins of Big Data' (New Yorker)</p>	<p><i>Group Work:</i> Construct a digital knowledge base from a dataset</p>

Week-Lec-Date	Topics & Readings	Remarks/Submissions
<p>Week VIII – Lec 15 & 16</p>	<p>Search Engines in AI Startups</p> <ul style="list-style-type: none"> -Developing rules of thumb for searching knowledge bases -Rewarding users' contributions to knowledge bases -Class Project: developing knowledge acquisition goals and priorities <p><u>Readings:</u></p> <ol style="list-style-type: none"> 1. Eurisko: The Computer with a Mind of its Own 2. Jaron Lanier, 'Why Facebook isn't Free' (video) 	<p><i>Group Work:</i> Cleaning and debugging of digital knowledge base</p>
Part IV: Product Design in AI Startups		
<p>Week IX – Lec 17 & 18</p>	<p>Monetization of AI Startups/Graphical Interfaces</p> <ul style="list-style-type: none"> -Citation networks and micropayments -Introduction to graphical interface design for AI startups -Class Project: importance of user feedback; construction of templates for use cases <p><u>Readings:</u></p> <ol style="list-style-type: none"> 1. 'Walter Isaacson, 'How Bitcoin Could Save Journalism and the Arts' 2. Airbnb: 'Building a Visual Language' 	<p><i>Group Work:</i> Designing overall architecture of a knowledge base</p>
<p>Week X – Lec 19 & 20</p>	<p>Graphical Interfaces for AI Startups (Continued)</p> <ul style="list-style-type: none"> -Value creation standards for graphical interfaces in AI startups -Collecting user feedback regarding value creation with knowledge bases -Class Project: sketching techniques for user-oriented graphical interface design <p><u>Readings:</u></p> <p>Alan Kay: 'Personal Dynamic Media' (PDF)</p>	<p><i>Group Work:</i> Construct a graphical toolbox and prototype of a graphical interface for a digital knowledge base</p>
<p>Week XI – Lec 21 & 22</p>	<p>Product Design and Engineering in AI Startups</p> <ul style="list-style-type: none"> -Basic principles for developing a knowledge base into a technology usable by customers -Product design for use of a knowledge base -Class Project: Techniques for sketching in pseudocode <p><u>Reading:</u></p> <p>None</p>	<p><i>Group Work:</i> Converting digital knowledge base into pseudocode</p>

Week-Lec-Date	Topics & Readings	Remarks/Submissions
Part V: Product Development in AI Startups		
Week XII – Lec 23 & 24	<p>QUIZ 2</p> <p>Managing Product Development Processes in AI Startups</p> <ul style="list-style-type: none"> -Designing plans and setting goals for software development -Basics of Python coding -Business model design <p><u>Readings</u></p> <p><i>None</i></p>	<i>Group Work:</i> Revise pseudocode; design business model.
Week XIII – Lec 25 & 26	<p>Business Models and User Feedback in AI Startups</p> <ul style="list-style-type: none"> -Linking product design to business model -Revising product and business model according to user feedback -Class Project: basics of coding GUIs in Python <p><u>Readings:</u></p> <p><i>None</i></p>	<i>Group Work:</i> Build code for linking digital knowledge base to graphical interface
Week XIV – Lec 27	<p>Elevator Pitches for AI Startups</p> <ul style="list-style-type: none"> -Constructing an elevator pitch -Class Project: bootstrapping methods for Python code and display of graphical interface <p><u>Readings:</u></p> <p>1. Paul Graham, 'Viaweb's First Business Plan'.</p>	<i>Group Work:</i> Revising and debugging design of knowledge base and graphical interface
Week XV & XVI – Lec 28 & 29	<p>Group Presentations</p> <ul style="list-style-type: none"> -Students give user feedback 	<i>Group Work:</i> Present elevator pitch for knowledge base, and give a demo
Week XIV – Lec 30	Final Examination	