

Tamkang University Academic Year 111, 1st Semester Course Syllabus

Course Title	FEATURE SELECTION METHOD	Instructor	YEN SHWU-HUEY
Course Class	TEIBM1A MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM),	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	1A SDG4 Quality education		
D e p a r t m e n t a l A i m o f E d u c a t i o n			
I . Cultivate the ability to conduct independent research and problem solving. II . Strengthen creativity and research capacity. III . Build profound professional knowledge in computer science and information engineering. IV . Engage in self-directed lifelong learning.			
Subject Departmental core competences			
A. Independent problem solving ability.(ratio:20.00) B. Independent innovative thinking ability.(ratio:20.00) C. Research paper writing and presentation ability.(ratio:20.00) D. Research & development (R&D) ability in information engineering.(ratio:20.00) E. Project execution and control ability.(ratio:10.00) F. Lifelong self-directed learning ability.(ratio:10.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:10.00) 2. Information literacy. (ratio:20.00) 3. A vision for the future. (ratio:20.00) 4. Moral integrity. (ratio:10.00) 5. Independent thinking. (ratio:10.00) 6. A cheerful attitude and healthy lifestyle. (ratio:10.00) 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:10.00)			

Course Introduction	Feature selection is the process of selecting a subset of relevant variables from the total features available in the data set to build machine learning models. From this course, students can learn a variety of techniques that they can apply to select the most predictive features within the data set. This will allow students to build simpler, faster and more reliable machine learning models.
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The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

- I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.
- II. Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.
- III. Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	understand what is feature selection	Cognitive
2	Understand what are filter methods	Cognitive
3	understand what are wrapper methods	Cognitive
4	understand what are embedded methods	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEF	12345678	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)
2	AB	25	Lecture, Discussion	Discussion(including classroom and online), Practicum
3	ABD	235	Lecture, Discussion	Discussion(including classroom and online), Practicum
4	AB	23	Lecture, Discussion	Discussion(including classroom and online), Practicum

Course Schedule			
Week	Date	Course Contents	Note
1	111/09/05 ~ 111/09/11	Introduction	
2	111/09/12 ~ 111/09/18	feature selection	
3	111/09/19 ~ 111/09/25	Filter methods- Basics	
4	111/09/26 ~ 111/10/02	Filter methods- Correlation	
5	111/10/03 ~ 111/10/09	Filter methods- Statistics measures	
6	111/10/10 ~ 111/10/16	National day- no class	
7	111/10/17 ~ 111/10/23	gini index & entropy	
8	111/10/24 ~ 111/10/30	1st hr: Wrapper methods- Step forward selection, 2nd hr: will join CICET Conference	1-2pm in E680
9	111/10/31 ~ 111/11/06	Wrapper methods- Step backward selection	
10	111/11/07 ~ 111/11/13	midterm week	
11	111/11/14 ~ 111/11/20	Wrapper methods- Exhaustive search	
12	111/11/21 ~ 111/11/27	Wrapper methods- Feature shuffling	
13	111/11/28 ~ 111/12/04	Embedded methods- Lasso	
14	111/12/05 ~ 111/12/11	Embedded methods- Decision tree derived importance	
15	111/12/12 ~ 111/12/18	Embedded methods- Regression coefficients	
16	111/12/19 ~ 111/12/25	Recursive feature elimination	
17	111/12/26 ~ 112/01/01	ANOVA	
18	112/01/02 ~ 112/01/08	final week	
Requirement			
Teaching Facility		Computer, Projector	
Textbooks and Teaching Materials			
References			

Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	<p>◆ Attendance : 15.0 % ◆ Mark of Usual : 25.0 % ◆ Midterm Exam : %</p> <p>◆ Final Exam : %</p> <p>◆ Other (program coding and p) : 60.0 %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php.</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>