

# Mintra Ruensuk

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## Research statement

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### What is your research question for your PhD?

With the advancement of Web technology, learning technology has been developed in the past decade which allows learners to access various courses ubiquitously. It also includes interactive quiz and tools for learner evaluation. However, some topics are difficult and not suitable for some learners, beginners for example, the topics can be more complicated when language barrier prevents them from clearly understand the fundamental concept. For these reason, I have seen the opportunity to improve the way of learning, especially, in computer science.

Computer science can also be considered as one of the most complex topics. Learners need to have a clear understanding from basic to advanced knowledge. For example, understanding Object-oriented programming is required for Design Patterns. Based on my experience as a university lecturer, most of my students did not understand clearly what OOP is since it is conceptual which is untouchable. While working on Human-robot interaction as my master thesis, I have found that my work can stimulate people to be more interested in computer science.

Developing a suitable model or tool to encourage learner and aide them to have better understanding in computer science is a challenging topic. Augmented Reality for education can be used to create appropriated tool for interacting with learner. “*User-defined Gesture for Augmented Reality*” which have been done in HIT Lab NZ can be extended to develop an engagement tool that allow learners to gain more experiences throughout 3D model, and gesture action. For example, learning Object concept in OOP, learner can visually perceive the object via the 3D model which includes its class attribute and class method. Differently from the traditional way, learner can manipulate Object using gesture such as create new instance, object inheritance, class association, etc.

Interactive wall is also one of my solutions to improve learning process in computer science. Imagine that instructor and learner can participate together on a big wall. Gesture technique is used to be user commands. Instructor can pull up materials from mobile device or some other sources and share with learners, this will create an exciting learning environment. More importantly, I expect to develop a tool which is cost-effective and useful for various Thai universities where they are in resource limited setting.

Since my research question is to improve the way of learning in computer science. Otherwise, I open myself widely to other research topics as our world is growing fast, new discovery can be happen everyday. Hence, I am interested doing an internship first to learn more in detail which model or technology could be used for pursue my Ph.D.

I have strongly believe that computer science would change the world again, the way people connect to each others, the way people live. Promoting computer science to learners especially who lived in countryside with engagement tool or suitable model will expand the knowledge. Then, in near future, we can see innovative applications that make our life better.

**What research have you done in the past?**

I have received Master Degree in Computer Science (Software Engineering) in 2012 from Asian Institute of Technology, under the supervision of Dr. Matthew Dailey. I have researched about Human-robot interaction in service environment and came out with the thesis entitled “*Voice, Gesture, and Web Interfaces for Human Robot Interaction in Service Environments.*” I studied the interaction between robot and human being throughout voice, gesture, and Web Interfaces with Turtlebot (an iRobot Create integrated with a Microsoft Kinect). My research focused on the development of interfaces in order to facilitate non-experience user to simply control the robot.

Robot Operating System (ROS) is used as a framework which can obtain, build, write, and run code across multiple computers and multiple robots. Moreover, the ROS package was created on top of ROS to receive commands from user such as voice command, and finger command in term of gesture. From three interfaces, they are all satisfied with qualitative evaluation as Turtlebot can achieve correct destination and respond to the command in a timely manner. In term of user aspect, web-based system is most satisfied as it is convenience to user (drag and drop) and can provide related information on web page such as robot position, obstacles, inflated obstacles, laser scan, and a compressed video coming from Microsoft Kinect.

Before my thesis study, 2011, I have studied the Kinect technology to understand the definition of gesture recognition and gesture tracking. It was enable me to develop the program that allows user to interact with Kinect. With this program user can draws any shape they want, but I expected them to draw shapes within rectangle, circle, and even triangle. The contour is used to synthesize whether the shape is. Then, the result of hand tracking would be performed to the user.

The research that I have been conducted during the past three years is contributed not only to my master degree but it is also meaningful to other researchers. As a result, I have a passion to pursue my higher education in a broad area of human interface technology. To fulfill my long term future as a university lecturer, or a researcher in Thailand.

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## Nationality

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Citizen of Thailand

## Gender

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Female

## Education

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<b>Asian Institute of Technology</b> <i>M.Sc, Computer Science (Specialize in Software Engineering), 3.28/4</i>	<b>Thailand</b> <i>2010 – 2012</i>
<b>Mahanakorn University of Technology</b> <i>B.Sc, Information Technology (First Class Honors), 3.95/4</i> Senior project: Information Technology Jobs Matching By Groovy on Grails	<b>Thailand</b> <i>2005–2009</i>

## Master thesis

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**title:** *Voice, Gesture, and Web Interfaces for Human-Robot Interaction in Service Environments*

**supervisors:** Matthew Dailey, PhD

**description:** Robot Operating System (ROS) is used to enable Human-robot interaction with the Turtlebot (an iRobot Create integrated with a Microsoft Kinect). Building on and extending existing technologies, I have created a prototype restaurant waiter robot able to respond to voice, gesture, and Web-based commands. Available online at <https://sites.google.com/site/vgwhri/home>

## Interests

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- Human-computer interaction
- Human-robot interaction
- Agile software development
- Web and mobile technology
- Object-oriented technology
- Education technology

## Experience

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### Vocational.....

#### Think Blue Data

**Bangkok, Thailand**

*Software Engineer*

*2012–present*

Responsible for developing Web applications using **Ruby on Rails**. One of the applications is an online tool for planning and analyzing data and images generated by a portable water robot named ESP. It enables user to plan a mission before deployments, remote troubleshooting, sync data generated from ESPs to dedicated server, and process log files and images. After analyzed large dataset, an online tool will generate the visualizations which allow user to interact, filter and export. Moreover, this application is extended to serve user the visualizations of big data generated by water sensors around the world. We also develop interactive E-learning applications which provide classroom data in real-time. User can manage course's data such as lessons, learning materials, quizzes, and etc using Web-based interface.

The technologies behind these applications are **Ruby on Rails**, **Node.js**, **JavaScript**, and **Bootstrap**. We mainly use open-source libraries of JavaScript such as **jQuery**, **underscore.js**, **slickgrid**, **backbone**, **d3**, **nvd3**. Another technologies we have been using are **Rsync**, **Drupal** and **Apache Solr**.

Our team is using Agile software development. We deliver product to customer every 2 weeks. We mainly use XP, scrum process. After each iteration has finished, we have one day for researching everything we are interested in. It's a Hack Day. I have been researching various topics during my Hack Day such as play around with testing methodology tools, generated diagram, how to test rake task, play around with Bamboo, Hadoop, learning cloud architecture.

Personally, I have been using **Pomodoro Technique**. It helps me to manage the internal/external interruptions, so that I can see myself more hyper productive.

#### Mahanakorn University of Technology

**Bangkok, Thailand**

*Lecturer*

*2009–2010*

Department of Information Science and Technology,

Teaching Course: Modern Programming Language.

Co-Teaching Courses: Computer Graphic, Computer Network, Multimedia and animation technology, Data structure and algorithms, and Design Patterns.

### Miscellaneous.....

#### Thanyarat School

**Pathum Thani, Thailand**

*Speaker*

*2014*

Encourage high school students to learn more in computer science, also give them the inspirations in order to achieve their dreams.

#### Techfest

**Mumbai, India**

*Staff for International Robotics Challenge*

*2011*

I was the staff for the robot competition at Techfest (Asia's Largest Science and Technology festival). I administered Thai students who joined this competition.

#### High Schools

**Thailand**

*Speaker*

*2010*

I had travelled around Thailand to encourage high school students for further study in their field especially in computer science. I mostly talked about the guideline to study in the university.

## Honors, Awards, Grants

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**Asian Institute of Technology**  
*Royal Thai Government Scholarship*

**Pathum Thani, Thailand**  
*2010-2012*

**Mahanakorn University of Technology**  
*MUT Scholarship for outstanding students*

**Bangkok, Thailand**  
*2005-2009*

## Certificates

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Sun certified programmer for the Java platform, standard edition 5.0

## Publications

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Ruensuk, M., Information Technology Jobs Matching By Groovy on Grails. In Proceedings of *Conference on Electrical Engineering/Electronics Computer Telecommunications and Information Technology (ECTI-CARD)*, 2010, pp. 343 - 348.



# Academic records

Master degree.....



## ASIAN INSTITUTE OF TECHNOLOGY

### DEGREE OF MASTER

Issue Date: 25 May, 2012

Name Miss Mintra Ruensuk		Previous Degree(s)/Institution B.Sc. Mahanakorn University of Technology, Thailand		Year Awarded 2009	
Date of Birth 17 August 1986		Country Thailand			
Registration No. 111217		Date Admitted to AIT 11 August 2010		Option Thesis	
School School of Engineering and Technology		Credits/Institution Transferred		Degree Awarded Master of Science	
Field of Study Computer Science		Date of Graduation / Completion 01 June 2012			
Notes Area of Specialization: Software Engineering					
Course No.	Descriptive Course Title	Total Hours Lab. Lec.	Credits	Grade	GPA: Cumulative GPA
August Semester 2010					
AT70.02	Data Structure & Algorithms	0 45	3.0	B	
AT70.03	Theory of Computing	0 45	3.0	B	
AT70.12	Web Application Engineering	45 30	3.0	A	
AT70.19	Software Development and Quality Improvement	0 45	3.0	C+	
January Semester 2011					
AT70.07	Programming Languages and Compilers	0 45	3.0	B	
AT70.18	Software Architecture Design	0 45	3.0	B+	
AT70.9024	Selected Topic: The Semantic Web	0 45	3.0	B	
AT71.05	Information Systems Development and Management	15 30	3.0	B+	
Inter-Semester 2011					
AT60.993C	Special Study: Special Study on Kinect Technology		3.0	A	
			3		4 3.28
Coursework Credits Gained:			27.0		3.28
Thesis Credits Gained:			22.0		
Total Number of Credits Gained:			49.0		
Thesis Examination:				Passed	
Title of Thesis: Voice, Gesture, and Web Interfaces for Human-Robot Interaction in Service Environments					Grade: Excellent
Program Committee: 1 Dr. Matthew N. Dailey (Chairperson) 2 Dr. Masahiko Nagai (Member) 3 Dr. Stanislav S. Makhanov (Member)					
Official transcript not valid without signature and seal of the Institute					
Registry Coordinator					



# GRADING SYSTEM FOR GRADUATE PROGRAMS

Course Grade	Definition	Grade Points
A	<b>Excellent.</b> Thorough knowledge and mastery of concepts and/or techniques together with a high degree of skill and/or great originality in satisfying the requirements of a piece of work or course	4.00
B+	<b>Very Good.</b> Thorough knowledge and mastery of concepts and/or techniques together with a fairly high degree of skill in the use of those concepts and techniques in satisfying the requirements of a piece of work or course	3.50
B	<b>Good.</b> Good level of knowledge or mastery of concepts and/or techniques with a considerable skill in using them in satisfying the requirements of a piece of work or course.	3.00
C+	<b>Near Competent.</b> Level of knowledge or mastery of concepts and/or techniques requires more efforts to satisfy the requirements of a piece of work or course.	2.50
C	<b>Deficient.</b> Level of knowledge or mastery of concepts and/or techniques requires intensive efforts to satisfy the requirements of a piece of work or course.	2.00
D	<b>Highly Deficient.</b> Knowledge or mastery of concepts and /or techniques and understanding of the subject matter is unacceptably low.	1.00
F	<b>Failing.</b> Very poor with very limited knowledge or limited mastery and understanding of concepts and/or techniques; comprehension of the subject matter is very limited.	0
I	<b>Incomplete.</b> Course may be completed at a later time without prejudice	-
Pass/Fail	A "passing" grade refers to any grade above "1" and a "failing" grade refers to grade equal to "1" or below.	

A thesis, research study or project which is judged to be satisfactory shall be accorded one of the following grades:

Grade	Definition
<b>Excellent</b>	An excellent grade marks an exceptionally skillful and innovative piece of research. The work clearly and explicitly has significance in the respective field on a national and international level. The knowledge of previous research and theoretical discussion is comprehensive, the concepts relevant and derived skillfully from prior discourse in the respective field. Due to scientific or practical merits, the work could be published as such or as an abridged version in a scientific or - in case of a project - practitioner's journal or a similar reviewed publication in the field.
<b>Very Good</b>	Overall, the work indicates the author's independent, critical and innovative research method, ability to analyze theoretically substantial bodies of knowledge and problems or the skill to implement solutions to significant practical assignments. The research goals, concepts and terminology and research problems are well-determined and skillfully combined into a theoretical framework. The research methodology is well chosen and argued, and the gathering and analysis of material has been done with insight.
<b>Good</b>	The work demonstrates, while not on a high level, the author's ability to accurately conduct research or -- in case of a project - prepare solutions to practical problems. The topic and approach chosen may be conventional. The methodical choices have been accounted for, if only narrowly. Theories and research results related to the research subject have been discussed, but on the whole the approach may be mechanical, merely listing the relevant research bases. The language range used may be limited.
<b>Fair</b>	The research work is acceptable but there are shortcomings on several aspects. Research goal and the terminology used may be unclear. The scientific or practical background may be either too narrow or badly delimited. Analysis of the material may be incomplete and the presentation of the results not fully convincing.

Note: Internships are graded Excellent, Very Good, Good or Fair.

Grades received for all courses are used in the computation of cumulative averages, but only course grades of C or higher can be counted to satisfy the credit requirement.

A student must repeat a required course if the grade awarded was not considered satisfactory (grade "D" or "F"). A student may choose to repeat any course. When a course is repeated, only final grade is recorded on the final transcript, along with no. of attempts noted. Students who repeat courses are not eligible for awards based on CGPA. Students are charged for repeating courses at the standard rate per credit hour.

An audit course cannot be given grades or credit as the student is not required to take examinations, but may participate in class discussions at the discretion of the course instructor.

## DEGREE REQUIREMENTS:

Degree Programs	Term System (before August 2003)	Semester System	
		August 2003 to July 2004	August 2004 to present
Doctor Degree	18 credits of coursework of which not more than 6 credits are earned from special studies	18 credits of coursework for those who earned their Master degree at AIT, and 24 credits for those who earned their Master degree elsewhere, of which not more than 6 credits are earned from special studies	18 credits of coursework, of which not more than 6 credits of special studies may be taken by those candidates who earned their Master degree at AIT
		For the degree of Doctor of Business Administration (DBA), 24 credits of coursework of which not more than 3 credits are from special studies.	
	A doctoral student must complete a doctoral dissertation (worth 66 credits; 60 credits for DBA) and defend it at an oral examination. The dissertation, which is not graded, must demonstrate scholarly distinction and show that, through the research performed during the program, the student has contributed to the advancement of knowledge in the chosen field of study. The student must have at least one scientific paper based on the dissertation published in or accepted by an international refereed journal (from May 2006 onwards). A satisfactory report from the external examiner selected by the Program Committee is also required for the doctoral degree. The required minimum cumulative grade point average for Doctoral Degree is 3.50.		
Master Degree	55 credits (60 credits for MBA) which includes 12 credits of research study or a research thesis worth the equivalent of 25 credits (18 credits for MBA)	48 credits, which may include a thesis of 22 credits, a research study of 10 credits or a project of 6-12 credits; 51 credits of coursework for MBA coursework only option;	
	Thesis, research study, project are, if judged to be satisfactory, graded <i>excellent</i> , <i>very good</i> , <i>good</i> or <i>fair</i> ; these grades, however, will not be included in the computation of the cumulative grade point average. Not more than 3 credits earned from special studies may be counted towards the credit requirement of the Master program. The required minimum cumulative grade point average for Master Degree is 2.75.		
Professional Master Degree		minimum 24 credits of coursework with a required cumulative grade point average of 2.75 and a 3-month internship worth 9 credits or a project worth 6-9 credits	
Diploma Program	The program requires a minimum of 24 credits of coursework including 2-6 credits of special studies. The required minimum cumulative grade point average for AIT Diploma is 2.75.		

## Non-Degree Programs

<b>Certificate of Advanced Studies (CAS)</b>	Minimum of 24 credits coursework including 6 credits from special studies	Same requirement as Doctor Degree
<b>Certificate Program</b>	There is no minimum cumulative grade point average for this non-degree program.	
<b>Special Program</b>	This program requires not less than 9 credits of coursework. There is no minimum cumulative grade point average set for this non-degree program.	
	This program is not normally directed towards completion of any of the above programs. Special program students register courses and are graded. No minimum coursework credits and cumulative grade point average are required for this program.	

English is the language of all Institutes' academic and administrative communication. As a requirement for graduation, students must attain a grade of 'C' or higher on all required English courses.

Contact Address: Registry, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand  
Fax: (66-2) 524-6326; Tel: (66-2) 524-5034-36, 6322, 6325; E-mail: [registry@ait.ac.th](mailto:registry@ait.ac.th); Homepage: [www.ait.ac.th](http://www.ait.ac.th)



Bachelor degree.....



# MAHANAKORN UNIVERSITY OF TECHNOLOGY

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## REGISTRATION OFFICE - ACADEMIC RECORD

Name Ms. Mintra Ruensuk

Faculty Information Science and Technology

Date of Admission June 1, 2005

Degree B.Sc. (Information Technology)

Date of Graduation March 13, 2009

Major -



ID 4814110017

Graduation Registration No.: 2551200339

1/2005			ITEC1313 Management Information Systems	3 A
CHEM0120 Chemistry I	3 A		ITEC1314 Operating Systems	3 A
CHEM0190 Chemistry Lab	1 B+		SCMA0003 Probability and Statistics	3 A
ENGL0105 Communication English I	3 A		18 Cr. GPS = 4.00	93 Cr. GPA = 3.94
ITEC0110 Introduction to Computers	3 A		2/2007	
MATH0100 Mathematics I	3 A		ITEC1321 Security in Information Technology	3 A
PHYS0101 Physics	3 A		ITEC1322 Advanced Database Systems	3 A
PHYS0109 Physics Lab	1 A		ITEC1323 Electronic Commerce and Business Models	3 B+
SOHU0022 Using Information Systems	3 A		ITEC1324 Multimedia Systems and Applications	3 A
20 Cr. GPS = 3.97	20 Cr. GPA = 3.97		ITEC1325 Laws and Information Technology	3 A
2/2005			ITEC2415 Special Topics in Information Technology	3 A
ENGL0106 Communication English II	3 A		SOHU0021 Industrial Psychology	3 A
ITEC0120 Introduction to Computer Programming	3 A		21 Cr. GPS = 3.92	114 Cr. GPA = 3.94
ITEC0121 Introduction to Telecommunications	3 A		3/2007	
ITEC0122 Fundamental of Information Technology	3 A		ITEC0330 Industrial Training	0 S
ITEC0123 Organization Function and Management	3 A		0 Cr. GPS = 0.00	114 Cr. GPA = 3.94
MATH0200 Mathematics II	3 A		1/2008	
18 Cr. GPS = 4.00	38 Cr. GPA = 3.98		ITEC1410 Information Technology Project I	2 A
1/2006			ITEC2402 Introduction to Artificial Intelligence	3 A
ENGL0107 Communication English III	3 A		ITEC2408 Computer Graphics	3 A
ITEC0210 Information Technological Laboratory I	2 A		ITEC2411 Project Management and Practice	3 A
ITEC0211 Discrete Mathematics	3 A		ITEC2414 Quality Assurance for Information Systems	3 A
ITEC0212 Data Structures and Algorithms	3 A		14 Cr. GPS = 4.00	128 Cr. GPA = 3.94
ITEC0213 Basic Digital Systems for Information Technology	3 A		2/2008	
SOHU0030 Economics and Business	3 A		BUCP0322 Principles of Object-Oriented Programming	3 A
17 Cr. GPS = 4.00	55 Cr. GPA = 3.99		ITEC1315 Design Patterns	3 A
2/2006			ITEC1420 Information Technology Project II	2 A
ENGL0201 General English	3 A		ITEC2401 Decision Support Systems	3 A
ITEC0220 Information Technological Laboratory II	2 A		11 Cr. GPS = 4.00	139 Cr. GPA = 3.95
ITEC1220 Information System Analysis and Design	3 B+		*** Course Requirements Completed ***	
ITEC1221 Introduction to Database Systems	3 A			
ITEC1222 Computer Architectures and Organizations	3 A			
ITEC1223 Internetworking Technology	3 B			
ITEC1224 Modern Programming Languages	3 A			
20 Cr. GPS = 3.77	75 Cr. GPA = 3.93			
1/2007				
ITEC1310 Principle of Software Engineering	3 A			
ITEC1311 Computer Network Design	3 A			
ITEC1312 Object-oriented Systems Construction	3 A			

Page 1 of 1

April 7, 2009

Date Issued

Grand Total Credits

139

Cumulative Grade Point Average

3.95

Director

Note : Transcript not valid without seal. No alteration or erasure.

Registration Office

8/10



## MAHANAKORN UNIVERSITY OF TECHNOLOGY

Mahanakorn University of Technology, originally known as Mahanakorn College, was founded in 1990 and was granted university status by the Ministry of University Affairs, four years later, in 1994.

### 1. FACULTIES

The university has five faculties: Faculty of Engineering, Faculty of Veterinary Medicine, Faculty of Information Science and Technology, Faculty of Business Administration, and Graduate School.

### 2. GRADING SYSTEM

LETTER	MEANING	VALUE	LETTER	MEANING
A	Excellent	4.00	S	Satisfactory
B+	Very Good	3.50	U	Unsatisfactory
B	Good	3.00	I	Incomplete
C+	Fairly Good	2.50	W	Withdrawn
C	Fair	2.00	AU	Audit
D+	Pass-Poor	1.50	CS	Credits from Standardized Tests
D	Pass-Very Poor	1.00	CE	Credits from Exam
F	Fail	0	CT	Credits from Training
FE	Fail Without Exam	0	CP	Credits from Portfolio
GPS	Grade Point Average for the Semester			
GPA	Cumulative Grade Point Average			

### 3. GRADUATION AND HONOURS

#### Undergraduate Programmes

A GPA of 2.00 or higher is required for graduation.

Students obtaining a GPA of 3.50 or above are awarded first class honours.

Students obtaining a GPA of 3.00 - 3.49 are awarded second class honours.

#### Graduate Programmes

A GPA of 3.00 or higher is required for graduation.

### 4. ACADEMIC SYSTEM

An academic year is divided into two regular semesters (15 weeks each) and a summer session (with the same amount of study hours as in a regular semester).

Only the Master of Business Administration Programme uses the trimester system consisting of three trimesters (15 weeks each).

### Expected start date

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September 1st, 2014

### Funding - Do you require funding?

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Yes, I do.