Penn Engineering

PERSONAL INFORMATION

Applicant Name

Last Name/Family Name: **Apicharttrisorn**

First Name/Given Name: **Kittipat**

Middle Name:

Other Name:

Notification Address

Line 1: **7/639 Vibhavadee-Rangsit Rd.**
Line 2:
City: **Chatuchak**
State:
Non U.S. State or Province: **Bangkok**
Permanent U.S. Zip Code:
Permanent non-U.S./Canadian
Postal Code: **10900**
Country: **THAILAND**
U.S. Telephone:
Non-U.S. Telephone Country
Code: **66**
Non-U.S. Telephone City Code: **02**
Non-U.S. Telephone: **5370097**
Address Expiration Date (if
Applicable):

Permanent Address

Line 1:
Line 2:
City:
State:
Non-U.S. State or Province:
Permanent U.S. Zip Code:
Permanent Non-U.S./Canadian
Postal Code: **10900**
Country:

U.S. Telephone:
Non-U.S. Telephone Country Code:
Non-U.S. Telephone City Code:
Non-U.S. Telephone:

Citizenship

Are you a U.S. Citizen, Permanent Resident, or Foreign National? **Foreign National**

Country of Citizenship: **THAILAND**

BACKGROUND INFORMATION

Date of Birth: **09/02/1982**
Gender: **Male**

Hispanic or Latino? **No**
Which Best Describes Your Background:
If Other, Please Specify:

American Indian or Alaska Native?
Which Best Describes Your Background:
If Other, Please Specify:
Are You Enrolled? **No**
If Yes, Please Enter Tribal Enrollment Number:

Asian? **Asian (including Indian subcontinent and Philippines)**
Which Best Describes Your Background: **Other Southeast Asia**
If Other East Asia, Please Specify:
If Other Indian Subcontinent, Please Specify:
If Other Southeast Asia, Please Specify: **Thailand**

Black?
Which Best Describes Your Background:
If Other, Please Specify:

Hawaiian?
Which Best Describes Your Background:
If Other, Please Specify:

White?
Which Best Describes Your Background:

Do You Come From a Family With An Annual Income Below Established Low-Income Thresholds? **Prefer Not to Answer**

Are You The First Generation In Your Family to Attend College? **No**
Do You Have a Disability? **No**

Are You a Veteran of The United States Armed Forces? **N**

PROGRAM INFORMATION

Degree Sought: **Doctor of Philosophy**

Program Selection: **Computer & Information Science**

Concentration: **Networks & Distributed Systems**

Concentration: **Databases & Data Management**

Concentration: **Machine Learning**

Term: **Fall 2014**

Enrollment Status: **Full-time**

Research Advisor Preference 1: **Boon Thau Loo**

Research Advisor Preference 2: **Andreas Haeberlen**

Other Research Advisor Preference:

External Submatriculation Program:

INSTITUTIONS ATTENDED

Institution 1

College University Code: **0004559**

Institution Name: **CHULALONGKORN BBA**

Institution Name, Other:

City: **BANGKOK**
City, Other:
State/Province:
State/Province, Other:
Country: **THAILAND**

Will You Receive This Degree Prior
To Penn Enrollment? **Masters**

Major Field of Study: **Computer Science**

GPA/Scale: **3.75**

Begin Date Attended: **05/2007**

End Date Attended: **11/2010**

Degree Conferred: **Masters**

Institution 2

College University Code: **0990796**

Institution Name: **KASETSART UNIVERSITY**

Institution Name, Other:

City: **BANGKOK**
City, Other:
State/Province:
State/Province, Other:
Country: **THAILAND**

Will You Receive This Degree Prior
To Penn Enrollment? **Baccalaureate**

Major Field of Study: **Electrical Engineering**

GPA/Scale: **2.49**

Begin Date Attended: **06/2000**

End Date Attended: **10/2004**

Degree Conferred: **Baccalaureate**

Institution 3

College University Code:

Institution Name:

Institution Name, Other:
City:
City, Other:
State/Province:
State/Province, Other:
Country:

Will You Receive This Degree Prior
To Penn Enrollment?

Major Field of Study:

GPA/Scale:

Begin Date Attended:

End Date Attended:

Degree Conferred:

Institution 4

College University Code:

Institution Name:

Institution Name, Other:

City:
City, Other:
State/Province:
State/Province, Other:
Country:

Will You Receive This Degree Prior
To Penn Enrollment?

Major Field of Study:

GPA/Scale:

Begin Date Attended:

End Date Attended:

Degree Conferred:

Institution 5

College University Code:

Institution Name:

Institution Name, Other:

City:

City, Other:

State/Province:

State/Province, Other:

Country:

Will You Receive This Degree Prior
To Penn Enrollment?

Major Field of Study:

GPA/Scale:

Begin Date Attended:

End Date Attended:

Degree Conferred:

STANDARDIZED TESTS

GRE

Verbal Score: **152** Date of Test: **09/21/2013**

Quantitative Score: **164** Date of Test: **09/21/2013**

Writing Score: **4.0** Date of Test: **09/21/2013**

GRE Subject:

GRE Subject Score: Date of Test:

TOEFL

Date of Test: **11/24/2013**

Reading Score: **26**

Listening Score: **29**

Writing Score: **30**

Speaking Score: **22**

Total Score: **107**

IELTS

Taken the IELTS?

Date of Test:

Score:

GMAT

Taken the GMAT?

Date of Test:

Verbal Score:

Quantitative Score:

Analytical Writing Assessment:

Total Score:

ADDITIONAL INFORMATION

Have you ever been placed on probation, dismissed, or suspended from any college or university for reasons pertaining to academic integrity? ☐ Yes ☑ No

Transcript 1

Kittipat Apicharttrisorn 6069654

CHULALONGKORN UNIVERSITY
BANGKOK 10330
THAILAND

NAME Mr. Kittipat Apicharttrisorn SEX Male STUDENT ID 5071040 21
IDENTIFICATION NO. 4 1101 00025 18 0 BIRTHDATE Sep 2, 1982 RELIGION Buddhism
NATIONALITY Thai BIRTHPLACE Samutprakan
ADMISSION May 28, 2007 (B.E. 2550) GRADUATION Nov 8, 2010 (B.E. 2553)
PREVIOUS DEGREE B.Eng. / Oct 2, 2004
FACULTY Engineering
DEPT / PROGRAM Computer Engineering
FIELD OF STUDY Computer Science
DEGREE Master of Science

COURSE NO.	ABBREVIATED NAME	CREDIT	GRADE
	1ST SEMESTER 2007		
2110606	RES METH COMP ENG	3	S
2110671	DATABASE MGT SYS	3	B+
2110684	INF SYS ARCH	3	A
2110711	THEORY COMPUTATION	3	B+
9 12 3.67	9 12 3.67	33.00	
	2ND SEMESTER 2007		
2110681	COMPUTER ALGORITHM	3	B+
2110701	SEMINAR COM ENG I	1	S
2110795	ADV TOPIC NETWORK	3	A
6 7 3.75	15 19 3.70	55.50	
	1ST SEMESTER 2008		
2110654	ARTIFCL INTELL	3	A
2110731	DISTRIBUT SYS	3	A
2110811	THESIS	3	P
6 6 4.00	21 25 3.79	79.50	
	2ND SEMESTER 2008		
2110682	EMB/REAL-TIME SYS	3	B+
2110811	THESIS	9	P
3 3 3.50	24 28 3.75	90.00	
	1ST SEMESTER 2009		
2110639	COMP SYS SECURITY	3	V
2110811	THESIS	0	P
0 0 0.00	24 28 3.75	90.00	
	2ND SEMESTER 2009		
2110781	SPEC TOP DIST SYS	3	V
2110811	THESIS	0	P
0 0 0.00	24 28 3.75	90.00	
	1ST SEMESTER 2010		
2110811	THESIS	0	P
0 0 0.00	24 28 3.75	90.00	
CA CG	GPA CAX CGX GPAX	GPX	

Total credits registered = 46
Total credits earned = 40
Cumulative grade point average = 3.75
****

2110811 THESIS GOOD
TITLE : DISTRIBUTED TIME SYNCHRONIZATION FOR WIRELESS SENSOR NETWORKS

A = 4.00	I = INCOMPLETE	CA = CREDIT ATTEMPTED
B+ = 3.50	M = MISSING	CG = CREDIT GRANTED
B = 3.00	P = IN PROGRESS	GPA = GRADE POINT AVERAGE
C+ = 2.50	S = SATISFACTORY	CAX = CUMULATIVE CA
C = 2.00	U = UNSATISFACTORY	CGX = CUMULATIVE CG
D+ = 1.50	V = VISITOR	GPAX = CUMULATIVE GPA
D = 1.00	W = WITHDRAWN	GPX = CUMULATIVE GRADE POINT
F = 0.00	X = NO REPORT	

GRADUATION : GPAX OF 3.00 IS REQUIRED
THESIS : VERY GOOD, GOOD, PASS, FAILURE

CERTIFIED TRUE COPY

(Assoc. Prof. Vallapa Prakobphol)
REGISTRAR

DATE Nov 26, 2010 (B.E. 2553)

NOT VALID WITHOUT UNIVERSITY SEAL

0210942054205

Kittipat Apicharttrisorn
6069654

KASETSART UNIVERSITY
OFFICE OF THE REGISTRAR
BANGKOK 10900, THAILAND.

STUDENT ID 4305149
NAME Mr. Kittipat APICHARTTRISORN
นายกิตติภัท อภิชาติตรีสรกร์
DATE OF BIRTH September 2, 1982
PLACE OF BIRTH Thailand

DATE OF ADMISSION June 5, 2000
FACULTY OF Engineering
FIELD OF STUDY Electrical Engineering
DEGREE CONFERRED B.Eng. (Electrical Engineering)
DATE OF GRADUATION October 2, 2004

COURSE CODE	COURSE TITLE	GR	CR
First Semester 2000			
175126	Taekwo	W	1
204111	Computers & Programming	C+	3
355111	Foundation English I	NP	3
417167	Engineering Mathematics I	B	4
420111	General Physics I	C	4
999021	Thai Language for Communication	C	3
	sem. G.P.A. = 2.39 cum. G.P.A. = 2.39		
Second Semester 2000			
175152	Fencing	F	(1)
208111	Engineering Drawing	D	3
355111	Foundation English I	NP	3
403111	General Chemistry	D	4
403112	Laboratory in General Chemistry	C+	1
417168	Engineering Mathematics II	C+	3
420112	General Physics II	B	3
420114	Laboratory in Physics II	C	1
999032	Thai Studies	D+	3
	sem. G.P.A. = 1.71 cum. G.P.A. = 2.00		
First Semester 2001			
204212	Data Structures & Algorithms I	W	3
205211	Electric Circuit Analysis I	C+	3
205214	Electrical Engineering Materials	W	3
208221	Engineering Mechanics I	D	3
208281	Workshop Practice	W	1
417267	Engineering Mathematics III	F	(3)
	sem. G.P.A. = 1.17 cum. G.P.A. = 1.82		
Second Semester 2001			
204221	Computer Organization & Assembly Language	C	3
205212	Electric Circuit Analysis II	C+	3
205213	Electric Circuit Laboratory	C	1
205251	Electronic Circuits & Systems I	D	3
205261	Electromechanical Energy Conversion I	C	3
205291	Electrical Practice	D+	1
417267	Engineering Mathematics III	C+	3
	sem. G.P.A. = 1.57 cum. G.P.A. = 1.86		
First Semester 2002			
205311	Signals & Systems	B+	3
205313	Applied Probability for Electrical Eng	C	3
205341	Electromagnetic Fields & Waves I	D+	3
205351	Electronic Circuits & Systems II	D+	3
205352	Electronics Laboratory	C	1
205361	Electromechanical Energy Conversion II	D+	3
205362	Electromechanical Energy Conv. Lab. I	C	1
208241	Thermodynamics I	A	3
	sem. G.P.A. = 2.30 cum. G.P.A. = 1.97		

COURSE CODE	COURSE TITLE	GR	CR
Second Semester 2002			
205312	Electrical Engineering Analysis I	W	3
205321	Communication Systems I	B	3
205331	Electrical Measurements & Instrumentations I	D	3
205332	Linear Control Systems	D+	3
205354	Digital Circuits & Logic Design	C	3
205414	Digital Signal Processing	C	3
355111	Foundation English I (Audit)	NP	3
	sem. G.P.A. = 1.00 cum. G.P.A. = 1.96		
First Semester 2003			
175124	Handball	A	1
204212	Data Structures & Algorithms I	B	3
205312	Electrical Engineering Analysis I	A	3
205422	Communication Systems II	D+	3
205429	Satellite Communications	A	3
205442	Antenna Engineering	C+	3
205491	Electrical Engineering Project I	A	1
205497	Seminar	B+	1
355111	Foundation English I	P	3
	sem. G.P.A. = 3.14 cum. G.P.A. = 2.15		
Second Semester 2003			
205424	Digital Telephone System	B	3
205427	Data Communications & Networks	B	3
205428	Wireless Communications	A	3
205443	Antenna Engineering Laboratory	C+	1
205499	Electrical Engineering Project II	B+	2
206401	Introduction to Safety Engineering	D+	1
208281	Workshop Practice	C+	1
355112	Foundation English II	B+	3
417268	Engineering Mathematics IV	B	3
	sem. G.P.A. = 3.16 cum. G.P.A. = 2.30		
Summer Session 2004			
208232	Engineering Mechanics II	A	3
355113	Foundation English III	B+	3
	sem. G.P.A. = 3.75		
First Semester 2004			
175160	Weight Training	A	1
205214	Electrical Engineering Materials	A	3
355231	English Writing I	B+	3
357121	Introduction to Logic	B+	3
999012	Health for Life	B+	3
999041	Man & Society	B	3
	sem. G.P.A. = 3.53 cum. G.P.A. = 2.48		
	Field Work	Pass	

TRANSCRIPT CLOSED

OMRAT CHUSAWAT
Assistant Registrar

NOT VALID WITHOUT EMBOSSED UNIVERSITY SEAL

Given On October 15, 2013 Checked by

Kittipat Apicharttrisorn

Personal Statement

Doctor of Philosophy
Computer and Information Science
University of Pennsylvania

This Personal Statement is intended for use with my application to the Doctor of Philosophy graduate program at the Department of Computer and Information Science, University of Pennsylvania. This document starts by portraying my educational background, of both the Bachelor and Master's degrees. Then, it briefly explains my research experience during the Master's degree study and states my professional experience during the employment as a systems engineer. Then my interest in UPenn's research is elaborated and finally my future plans after Ph.D. graduation are described. After finishing reading this statement of purpose, the committee will learn why I am qualified to be an excellent student of the program, what motivates me to pursue the doctoral degree at UPenn and why it is so important for my future profession that I earn this degree.

During my undergraduate study, in addition to a number of Electrical Engineering subjects, I studied a wide range of mathematical subjects including four Calculus courses, a course on Probability, and another on Linear Algebra and Complex Numbers, all of which are basic principles of computer science. Moreover, I passed two courses on computer programming, data structures and algorithms, which are the crucial knowledge of a successful computer scientist. For the Master's degree study, I passed eight credited computer science graduate courses. I studied two theoretical courses, namely Theory of Computation and Computer Algorithms, five systems courses namely Information Systems Architecture, Distributed Systems, Advanced Topics on Computer Networks (Multimedia, Wireless and Adhoc Networks), Embedded Systems, and Database Management Systems, and one Artificial Intelligence course. Moreover, I passed two non-credit courses - namely Computer Security and Special Topics on Distributed Systems (Service Computing). In sum, I earn a solid foundation in computer science as a result of my undergraduate and graduate study.

In addition, I gain valuable research experience during my Master's degree study and I would like to explain three principal research skills in this letter. First, I learn the critical reading skills. As an important part of research methodology in computer science, literature reviewing is an everyday activity of graduate students. Researchers study research papers not only to understand the overall concepts but also to critique them, find weak points and discover hidden assumptions. With this critical reading, I can find a research opportunity or direction implied in a research paper and can think of "what to do next". Second, I learn how to give an intelligible academic presentation. At the UbiNet lab under the supervision of Assistant Professor Dr. Chalermek Intanagonwiwat, each lab member took turns giving one progress presentation reporting the progress toward the thesis work and one paper presentation illustrating the ideas and results of a research paper of interest. Through this regular lab activity, I learned to select an interesting paper published in a well-known conference or journal publisher, to extract outstanding points in the paper and to present them in a way that made it easier for the audience to understand. Third, after completing a certain amount of literature review and implementation work, I need to publish a paper in order to organize my ideas into a standard format, to distribute my work for other researchers to study and to welcome feedbacks and comments from reviewers which help strengthen my work. According to my advisor, a high-quality paper in computer science should not only allow the readers to understand the overall picture of the work, but also enable them to implement it into the code themselves. Therefore, I learn to explain the data structures, algorithms, and communication packets so clearly that one could use all this information for further experimentation. In sum, I earn the research experience and skills not through lectures or workshops but by application and repetition throughout the years of the Master's degree study.

Up to now, I have published three academic publications, two of which are in international conferences' proceedings and the other is in an ACM journal. First, "Energy-Efficient Gradient Time Synchronization for Wireless Sensor Networks" was published in the proceedings of the Second International Conference on Computational Intelligence, Communication Systems and Networks or CICSyN. In the paper, we designed an extended version of gradient time synchronization protocols that was more time-accurate and energy-efficient, while maintaining a "gradient" property. With the gradient property, geographically adjacent nodes are able to maintain minimal synchronization errors. Second, "Desynchronization with an artificial force field for wireless networks" was published in ACM SIGCOMM's *Computer Communication Review*. The desynchronization problem was analogous to a resource allocation problem in which nodes cooperated to take turns accessing to the same resource. In this paper, we provided a prove of convexity of this problem. Additionally, we designed a desynchronization protocol, inspired by electromagnetic force field, that performed in a distributed manner, better scaled with network sizes and densities and produced

less desynchronization errors. The first two papers were my work under the supervision of Assistant Professor Dr. Chalermek Intanagonwiwat. Third, in 2013, I had a change to work on a research project with Associate Professor Dr. Teerasit Kasetkasem of Kasetsart University. In this project, we used a signal processing technique to track a moving object in a field given binary sensor observations. In this paper, I was fully responsible for the manuscript preparation and partly for experimental simulation. Finally, the paper titled "A Moving Object Tracking Algorithm Using Support Vector Machines in Binary Sensor Networks", was finally published in the proceedings of The 13th International Symposium on Communications and Information Technologies.

I also have seven-year professional experience working at Aeronautical Radio of Thailand or Aerothai, a state enterprise under the Ministry of Transport, Thailand. One of Aerothai's principal missions is to provide safe and efficient air navigation services or air traffic control within Thailand's airspace. Specifically, the department of air traffic data systems engineering is responsible for the provision and administration of data systems that support air traffic controllers' operations. At the department, my colleagues and I design, configure, and implement those systems by taking advantage of enterprise-graded computing system products, mostly of the USA, such as HP and Dell servers, Oracle and Microsoft databases, Cisco network equipment, and VMWare's virtualization technology, etc. One of the interesting aeronautical applications that runs on these infrastructures is the flight scheduling service, named Bay of Bengal Cooperative Air Traffic Flow Management System or BOBCAT. BOBCAT manages the air traffic over the Bay of Bengal, which has the security constraints. Approximately 60 flights per day request to fly through this narrow airspace; therefore, International Civil Aviation Organization or ICAO demands that the airspace be managed by Aerothai, after the systems competition with other organizations. Nowadays, BOBCAT smoothly serves tens of airline customers requesting air space slots over the area every day thanks to Aerothai's effective software systems and responsive operational procedures. Therefore, I have witnessed how these innovative products help enhance reliability and efficiency of air traffic data systems. This hand-on experience has provided me with practical aspects of enterprise information systems with the safety-critical applications, and motivates me to study more deeply and broadly in computer science, a core foundation of computer-related products and services.

I determine to advance my study to a PhD in the US because of the following three main reasons. First and most importantly, I want to be a professional researcher in computer science in the future, either in an academic institution or in a research laboratory and a doctoral degree is an important precursor to the research profession. Second, I agree with Matt Welsh, previously a professor of Computer Science at Harvard University, about a PhD study. He suggests that "You get an intense exposure to every subfield of Computer Science, and have to become the leading world's expert in the area of your dissertation work." For example, during my PhD study, I will have an opportunity to get exposed to a variety of academic subjects and research projects in computer science, such as Artificial Intelligence, Computer Graphics, Robotics, Databases, Systems, Software Engineering, and Computational Science, etc., all of which will considerably expand my intellectual horizons in computer science. Moreover, the PhD study will train me to be an expert in the field of my dissertation through the educational systems and processes, and through my assiduous and persevering efforts. Third, I am conscious that studying at a PhD level requires an academically vibrant environment which includes surroundings with brilliant students and faculty members, as well as accessible academic conferences and seminars. In my opinion, all of these are prevalent in the US educational systems and universities.

I aspire to become a PhD student at the Department of Computer and Information Science, University of Pennsylvania, a prestigious university in the US, because I am particularly interested in its research. The following are UPenn's faculty members whose research projects interest and excite me. First, Professor Boon Thau Loo's "Distributed Timeaware Provenance" proposes a novel provenance model for distributed systems. Because digital data can be easily replicated, modified, or processed, data provenance has become an interesting research topic in computer science. Data provenance means the source or originality of data of which every manipulation must be acknowledged or recorded. In the paper, the authors apply provenance to distributed systems and show that Distributed Timeaware Provenance can help network engineers better identify, debug, or solve problematic issues in such complex systems.

Second, Associate Professor Zachary G. Ives takes part in a huge Internet architecture project called "NEBULA". In my opinion, NEBULA merges the concepts of cloud computing with the Internet of Things (IoT) to provide a secure, reliable and cost-effective Internet for the future. My current research

interest includes IoT. According to ABI Research, more than 30 billion devices will be wirelessly connected to IoT by 2020. An interesting question is that how the future IoT supports such heterogeneous data ranging from one-bit sensor data, 1k RFID data, to a stream of video on demands using peer-to-peer systems with reliable and secure communications. Will we still need to use IP or MAC addresses for billions of devices? How will routing mechanism be scalable enough to support an enormous number of devices?

Third, Assistant Professor Andreas Haeberlen's "Answering Why-Not Queries in Software-Defined Networks with Negative Provenance" is an interesting publication that proposes a new way of queries for debugging software-defined networks with "negative provenance". Instead of asking what is present, it is sometimes more useful for debugging to ask what is absent. For example, a network administrator is sometimes curious about why a particular rule has not been executed or a certain packet has not been processed, and a traditional debugging model does not allow him to do so. This project is an example of creative thinking of looking for a research problem and finding a systematic approach to solve the problem.

My plan after graduation with a doctoral degree is that I will look for a research or post-doc position that is related to the field of my dissertation in order to continue to accumulate research knowledge and experience. Therefore, within five years after graduation, I will become a real expert in the field and plan to lead my own research laboratory. Research experience gained during the PhD study and accumulated after graduation will play an important role in attracting funds and students into my lab.

I would like to express my appreciation to the graduate admission committee of University of Pennsylvania for taking my Personal Statement along with other application materials into consideration for admissions. I hope that the committee will be convinced that my educational background, academic and professional experience, and research ambition and motivation are the evidences sufficient to suggest that I will be an excellent student of the PhD program and a competent researcher in computer science.

KITTIPAT APICHARTTRISORN

Office Address
Air Traffic Data Systems Engineering Department
Aeronautical Radio of Thailand
Sathon, Bangkok, Thailand 10120
(+66) 2285-9177

Permanent Address
7/639 Vibhavadee-Rangsit Rd.
Chatuchak, Bangkok 10900
(+66) 2537-0097

OBJECTIVE

A Ph.D. student position in computer science with research interest in computer networks, distributed resource allocation, sensor networks, software-defined networking, and internet of things.

EDUCATION

Master of Science, Computer Science
Chulalongkorn University, Bangkok, Thailand GPA 3.75 / 4.00 May 2007 - November 2010
THESIS - Distributed Time Synchronization in Wireless Sensor Networks
ADVISOR - Asst. Prof. Dr. Chalermek Intanagonwiwat

Bachelor of Engineering, Electrical Engineering
Kasetsart University, Bangkok, Thailand GPA 2.49 / 4.00 June 2000 - October 2004
SENIOR PROJECT: Adaptive Multi-Rate - Wideband (AMR-WB) speech codec Testing
SENIOR PROJECT SUPERVISOR: Assoc. Prof. Dr. Mongkol Raksapatcharawong

EMPLOYMENT

Senior Systems Engineer January 2007 - Present
Air Traffic Data Systems Engineering Department
Aeronautical Radio of Thailand, Bangkok, Thailand

- Administer, monitor, and maintain aeronautical data systems for which the Air Traffic Data Systems Engineering Department take responsibility so that the systems operate to support availability, safety and continuity of air navigation services
- Perform preventive maintenance, corrective maintenance, software and hardware installation, and deployment of monitoring systems (e.g. ICMP, SNMP)
- Inspect and troubleshoot problems, coordinate and consult with related internal and external aeronautical units to troubleshoot problems and investigate causes of interruption or outage of data systems services
- Gather information from users and report usage and service problems to managers, programmers and the director, to improve systems' reliability, availability and serviceability

Network Engineer March 2005 - September 2006
1tonet Co., Ltd., Bangkok, Thailand

- Design and implement voice over IP subsystems
- Integrate IP telephony with customers' existing public exchange systems

PUBLICATIONS

- **"A Moving Object Tracking Algorithm Using Support Vector Machines in Binary Sensor Networks"**

  Authors Dusadee Apicharttrisorn, Kittipat Apicharttrisorn and Teerasit Kasetkasem
  Publication Name The 13th International Symposium on Communications and Information Technologies
  Publication Date September 2013
  Abstract *Wireless sensor technologies have enabled us to deploy such small sensors to monitor an area of interest. Object tracking is one of the most attractive applications to be implemented with wireless sensor networks (WSNs). However, many solutions are struggled with energy-draining global positioning system (GPS), poorly-performed trilateration for indoor usage, and impractical, complex algorithms to be implemented in sensor nodes. This paper proposes a moving object tracking algorithm using support vector machines (MOT-SVM). The MOT-SVM takes advantage of light-weighted directional binary sensor networks, and state-of-the-art signal processing algorithms, namely the support vector machines and particle filters. We compare our proposed algorithm with the Aslam's work through the simulation. We examine our algorithms for various movement scenarios such as the linear, random and the 8-model trajectories, and the scenarios in which observing sensors make observation errors.*

- **"Desynchronization with an artificial force field for wireless networks"**

  Authors Supasate Choochaisri, Kittipat Apicharttrisorn, Kittiporn Korprasertthaworn, Pongpakdi Taechalertpaisarn and Chalermek Intanagonwiwat
  Publication Name SIGCOMM Computer Communication Review
  Publication Date March 2012
  Abstract *Desynchronization is useful for scheduling nodes to perform tasks at different time. This property is desirable for resource sharing, TDMA scheduling, and collision avoiding. Inspired by robotic circular formation, we propose DWARF (Desynchronization With an ARtificial Force field), a novel technique for desynchronization in wireless networks. Each neighboring node has artificial forces to repel other nodes to perform tasks at different time phases. Nodes with closer time phases have stronger forces to repel each other in the time domain. Each node adjusts its time phase proportionally to its received forces. Once the received forces are balanced, nodes are desynchronized. We evaluate our implementation of DWARF on TOSSIM, a simulator for wireless sensor networks. The simulation results indicate that DWARF incurs significantly lower desynchronization error and scales much better than existing approaches.*

- **"Energy-Efficient Gradient Time Synchronization for Wireless Sensor Networks"**

  Authors Kittipat Apicharttrisorn, Supasate Choochaisri and Chalermek Intanagonwiwat
  Publication Name 2010 Second International Conference on Computational Intelligence, Communication Systems and Networks (CICSyN)
  Publication Date July 2010
  Abstract *Wireless sensor network (WSN) applications usually demand a time-synchronization protocol for node coordination and data interpretation. In this paper, we propose an Energy-Efficient Gradient Time Synchronization Protocol (EGTSP) for Wireless Sensor Networks. In contrast to FTSP, a state-of-the-art synchronization protocol for WSNs, EGTSP is a completely localized algorithm that achieves a global time consensus and gradient time property using effective drift compensation and incremental averaging estimation. In contrast with GTSP, a gradient-based fixed-rated time synchronization protocol, our protocol provides adaptive beaconing for applications to optimize energy savings by selecting appropriate message-broadcast periods. The protocol is implemented and evaluated on multi-hop networks that consist of Telosb motes running TinyOS. The experimental results indicate that our protocol achieves a network-wide global notion of time, attains small synchronization errors, and utilizes energy efficiently.*

ACADEMIC PROJECTS

- Project Name: Time Synchronization for Wireless Sensor Networks

  Objective MS Thesis's Research Project
  Description Time synchronization is a challenging but important task for wireless sensor networks (WSNs) because of the resource-constrained characteristics. This project aims to explore a distributed protocol and algorithm of time synchronization that is time-accurate and energy-efficient while maintaining a gradient time property.
  Period January 2008 - October 2010
  Roles and Responsibility Main investigator who reviews literature, designs, analyzes, and implements algorithms, finally produces a publication
  Tools and Environments TinyOS, Ubuntu, Gnuplot, TelosB* motes

- Project Name: Desynchronization as Distributed Resource Allocations and TDMA

  Objective Research Project
  Description Desynchronization is an abstraction that arranges nodes declaring to access a shared resource in a round-robin schedule. It can be applied to solve resource allocation problems especially in distributed systems. This research project aims to explore a novel distributed desynchronization algorithm.
  Period March 2010 - Present
  Roles and Responsibility Literature review, experiments, and publications
  Tools and Environments TinyOS, TOSSIM, Ubuntu, Gnuplot

- Project Name: Moving Object Tracking in Binary Sensor Networks

  Objective Research Project
  Description Moving object tracking is a potential application of wireless sensor networks. Binary sensor networks require nodes only to send one-bit information to the central processing node which is responsible for signal processing tasks to track a moving object. This research project aims to explore a signal processing algorithm that tracks the object more accurately with tolerance to signal errors.
  Period March 2013 - Present
  Roles and Responsibility Literature review, experiments, and publications
  Tools and Environments Matlab

- Project Name: Distributed Online Ticket Reservation with Display on Google Maps

  Objective Term Project (Graduate Course: Distributed Systems)
  Description This project aims to provide an opportunity for students to design and implement a distributed system which reserves online tickets and displays the status through Google Maps.
  Period June 2008 - October 2008
  Roles and Responsibility Design overall systems and demonstration
  Tools and Environments Microsoft .NET and Google Map APIs

- Project Name: Thailand's Undergrad Admission Systems: Information Systems Architecture

  Objective Term Project (Graduate Course: Information Systems Architecture)
  Description This project aims to provide an opportunity for students to design Thailand's Undergrad Admission Systems. During this term project, we combine each other's experience and viewpoints of information systems and brainstorm the viable solutions for the systems. The final document consists of the design of network, database, hardware, middleware, and software. The designed architecture is supposed to support thousands of concurrent users who use the system from registrations to final admission reports.
  Period June 2007 - October 2007
  Roles and Responsibility Part of group discussion and brainstroming sessions
  Tools and Environments MS Words, MS Visio

- Project Name: Adaptive Multi-Rate - Wideband (AMR-WB) speech codec Testing

  Objective Undergraduate Senior Project (Electrical Engineering Project)
  Description Adaptive Multi-Rate Wideband (AMR-WB) is a patented wideband speech coding standard developed based on Adaptive Multi-Rate encoding, using similar methodology as Algebraic Code Excited Linear Prediction (ACELP). AMR-WB provides improved speech quality due to a wider speech bandwidth of 50 - 7000 Hz compared to narrowband speech coders which in general are optimized for POTS wireline quality of 300 - 3400 Hz. This project aims to document the study of AMR-WB in both theoretical and practical aspects.
  Period June 2003 - Mar 2004
  Roles and Responsibility Design and conduct experiments, and document a project report
  Tools and Environments MS Visual C

* TelosB is a WSN platform that is widely used by research laboratories worldwide.

PROFESSIONAL PROJECTS

- Project Name: Aeronautical Message Switching Systems (AMSS)

  Description AMSS is a core aeronautical data system that switches, stores and manipulates aeronautical messages interexchanged between aeronautical units worldwide so that flights are operated and managed properly and continuously.
  Roles and Responsibilities Administer, monitor, and maintain the system, inspect and troubleshoot problems
  Tools and Environments Redhat Enterprise, Windows Servers, Oracle Database 10g, Cisco switches and routers

- Project Name: Aeronautical Message Handling Systems (AMHS) and X.400

  Description According to ICAO*, Aeronautical Message Handling System is a new standard for aeronautical ground-ground communications (e.g. for the transmission of NOTAM**, Flight Plans or Meteorological Data) based on X.400 profiles. Aeronautical Radio of Thailand progresses to establish AMHS connectivity with several countries such as India, Singapore, Hong Kong, Italy, Laos, Vietnam, and Cambodia.
  Roles and Responsibilities Test and record system connectivity and functionality
  Tools and Environments Redhat Enterprise, Oracle Database 10g, ATN Routers

- Project Name: Flight Data Management Center

  Description Flight Data Management Center was established to unify clearance of national flight plans and their modifications to a single center in order to streamline air navigation operations. Computer-based systems are used to provide the functionality of FDMC.
  Roles and Responsibilities Administer, monitor, and maintain the system, inspect and troubleshoot problems
  Tools and Environments Java, Redhat Enterprise, MS Windows Servers, Oracle Database, Cisco switches and routers

- Project Name: Operational Aeronautical Meteorological Data (OPMET) and Regional OPMET Bulletins Exchange (ROBEX) Systems

  Description Aeronautical Radio of Thailand was designated to provide a regional OPMET data bank of the Asia/Pacific region. Its core function is to accumulate and store aeronautical meteorological data that can be retrieved remotely and automatically by queries from relevant aeronautical organizations. ROBEX processes such data in the form of bulletins, a periodic conclusive report, and periodically send them to related aeronautical units.
  Roles and Responsibilities Administer, monitor, and maintain the systems, inspect and troubleshoot problems

Tools and Environments Java, Redhat Enterprise, MS Windows Servers, Oracle Database, Cisco switches and routers

* ICAO (International Civil Aviation Organization) is a specialized agency of the United Nations which codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth. Its headquarters are located in the Quartier International of Montreal, Quebec, Canada.

** NOTAM (Notice to Airmen) is a notice filed with an aviation authority to alert aircraft pilots of potential hazards along a flight route or at a location that could affect the safety of the flight. Aeronautical Radio of Thailand is authorized to provide a NOTAM data bank that stores and retrieves NOTAM messages which are distributed by AMSS and AMHS.

GRANTS

- Grant Name: International Conference Attendance Support Grants for Graduate Students

  Period July 2010
  Purpose This grant provides partial financial support for graduate students whose academic papers are accepted to be presented at an international conference.
  Amount Approximately 900 USD
  Granted by Graduate School, Chulalongkorn University Bangkok, Thailand

- Grant Name: AINTEC* 2010 Conference Attendance Grants

  Period November 2010
  Purpose This grant provides full financial support for graduate students who are interested in Internet research so that they can attend and participate in this academic conference.
  Amount Attendance Fee (Unknown)
  Granted by Thailand Research Education Network Association (ThaiREN), Bangkok, Thailand

- Grant Name: AINTEC* 2008 Conference Attendance Grants

  Period November 2008
  Purpose This grant provides full financial support for graduate students who are interested in Internet research so that they can attend and participate in this academic conference.
  Amount Attendance Fee (Unknown)
  Granted by Thailand Research Education Network Association (ThaiREN), Bangkok, Thailand

* AINTEC (Asian INTernet Engineering Conference) is an international conference held in Thailand and hosted by Internet Education and Research Laboratory, Asian Institute of Technology, Thailand `http://www.interlab.ait.ac.th/`. This single-tracked conference attracts high-quality papers from global Internet research communities.

ACADEMIC ACTIVITIES

- **Event** IEEE International Conference on Computer Communications (INFOCOM 2012)

  Activity Review papers delegated by Asst. Prof. Dr. Chalermek Intanagonwiwat

- **Event** IEEE International Conference on Computer Communications (INFOCOM 2011)

  Activity Review papers delegated by Asst. Prof. Dr. Chalermek Intanagonwiwat

CERTIFICATES

- Certificate Name: *"Embedded Software Engineering"*

  Content Embedded Hardware Architecture, Operating Systems for Embedded Systems, Programming Embedded Systems, Embedded Systems I/O, Embedded Software Engineering

  Certified by Computer Engineering Department, Chulalongkorn University and Software Industry Promotion Agency (SIPA)

  Duration 22 - 27 October 2007

- Certificate Name: *"Certified Thaicom Users"*

  Content General functionality of THAICOM satellites, Basic VSAT setup, Signal optimization and interference

  Certified by THAICOM Public Company Limited

  Duration 3 April 2007

- Certificate Name: *"Network Design and Implementation I"*

  Content Design, analysis, implementation and troubleshooting of computer networks and hands-on workshops with CISCO routers and switches

  Certified by Continuing Education Center, Chulalongkorn University

  Duration 29 January 2005 - 23 April 2005

SKILLS

Programming Languages

- C, C++, NesC, TinyOS, Matlab, Java, Python, SQL

Computer Software

- Ubuntu, UNIX, Gnuplot, Latex.

Language Proficiency

- English: TOEFL 107 iBT (Test Date: 24 November 2013)
  Reading: 26 / 30, Listening: 29 / 30, Speaking: 22 / 30, Writing: 30 / 30
- Thai: Native

Graduate Record Examination

- Test Date: 21 October 2013
- Verbal Reasoning Score: 152 / 170 (53^{rd} *Percentile Rank*)
- Quantitative Reasoning Score: 164 / 170 (89^{th} *Percentile Rank*)
- Analytical Writing Score: 4.0 / 6.0 (54^{th} *Percentile Rank*)

VOLUNTEER SERVICES

- Event Name: CANSO* Global ATM Summit and 15th Annual General Meeting (AGM)

  Period 11 June 2011 - 14 June 2011
  Description : As Air Chief Marshal Somchai Thean-anant, a former President of Aeronautical Radio of Thailand delivered a policy to recruit the company's employees to volunteer to help organize these eminent events that welcomed hundreds of worldwide dignitaries and executives from all segments of the aviation industry. I applied for a volunteer position and was then selected, under the supervision of Ms. Tipaporn Nippakakorn, Vice President (Human Resource), to help organize the conference and seminar rooms at the Renaissance Hotel, Bangkok.
  Contributions : Help organize meeting rooms
  Benefits : Overall, the company succeeded in organizing these meetings which brought about and strengthen collaboration and understanding between global aeronautical organizations. My personal benefits included friendship with other employees from various departments of the company and awareness of aviation industry's next generation gathered during the conference and seminar attendance. Most importantly, I learn to volunteer myself to contributing back to my organization and aviation society without any pay.

  *CANSO the Civil Air Navigation Services Organization is the global voice of air navigation service providers (ANSPs) worldwide. CANSO's members support over 85 percent of world air traffic and share information and develop new policies, with the ultimate aim of improving air navigation services (ANS) on the ground and in the air.

INTERESTS AND HOBBIES

Jazz and blues guitar, photography, cooking, swimming

REFERENCES

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