

# KITTIPAT APICHARTTRISORN

## Office Address

Air Traffic Data Systems Engineering Department  
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## 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      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      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 of
- Test and report IP telephone call quality, e.g. voice clarity and delay, to the technical manager

## PUBLICATIONS

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

**Authors** Dusadee Apicharttrisor, Kittipat Apicharttrisor and Teerasit Kasetkasem

**Publication Name** The 13th International Symposium on Communications and Information Technologies

**Publication Date** To appear

**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 [1] 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 Apicharttrisor, 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 Apicharttrisor, 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 difficult but important task for wireless sensor networks (WSNs) because of their resource-constrained characteristics. This project aims to tackle this problem by exploring and researching distributed algorithms that are suitable for WSNs  
**Period** January 2008 - October 2010  
**Roles and Responsibility** Main investigator who reviews literature, designs, analyzes, and implements algorithms, finally produces an academic publication  
**Tools and Environments** TinyOS, Ubuntu, Gnuplot, TelosB\* motes
- Project Name: Desynchronization as Distributed Resource Allocations and TDMA  
**Objective** Research Project  
**Description**  
**Period** March 2010 - Present  
**Roles and Responsibility**  
**Tools and Environments** TinyOS, TOSSIM, Ubuntu, Gnuplot
- Project Name: Moving Object Tracking using Support Vector Machine in Binary Sensor Networks  
**Objective** Research Project  
**Description**  
**Period** March 2013 - Present  
**Roles and Responsibility**  
**Tools and Environments** Matlab
- Project Name: Distributed Online Ticket Reservation with Display on Google Maps  
**Objective** Graduate Course Project (Distributed Systems)  
**Description**  
**Period** June 2008 - October 2008  
**Roles and Responsibility**  
**Tools and Environments**
- Project Name: Thailand's Undergrad Admission Systems: Information Systems Architecture  
**Objective** Graduate Course Project (Information Systems Architecture)  
**Description**  
**Period** June 2007 - October 2007  
**Roles and Responsibility**  
**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**  
**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 switch, store and manipulate aeronautical data sent and received by aeronautical units worldwide so that flights are operated and managed properly and according to ICAO's recommendations\*.

**Roles and Responsibilities** Administer, monitor, and maintain the systems, 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, ATN Routers

- Project Name: Flight Data Management Center

**Description** Flight Data Management Center was established to unify clearance of flight plans and modifications to a single center in order to streamline air navigation operations.

**Roles and Responsibilities**

**Tools and Environments** Redhat Enterprise, Windows Servers, Oracle Database 10g, 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 regional OPMET data bank of the Asia/Pacific region. Its core function is to accumulate and store aeronautical meteorological data that can be retrieved and must reply to incoming query messages. ROBEX processes such data in the form of bulletins and periodically send them to related aeronautical units

**Roles and Responsibilities**

**Tools and Environments**

- Project Name: Departmental Web Portal with Drupal

**Description**

**Roles and Responsibilities**

**Tools and Environments**

- Project Name: English as a Second Language for Engineers

**Description** I initiate this departmental English course project because the Asian Economic Community (AEC) will bond the ten members together more tightly and the English language is an important rope. Moreover, aviation is inherently an international business and collaboration between countries from multi-regions is prevalent. In this project, I am the instructor teaching English grammar upon which the four English skills, namely reading, writing, listening, and speaking, are built.

**Roles and Responsibilities** Instructor

**Tools and Environments** Projector and iPad

- Project Name: Systems Monitoring with SNMP and Zabbix

**Description**

**Roles and Responsibilities** Administrator

## **Tools and Environments** Ubuntu, Zabbix Servers,

\* 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 1200 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 104 iBT (Test Date: 25 Aug 2013)  
Reading: 28, Listening: 26, Speaking: 22, Writing: 28
- Thai: Native

## 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, President of Aeronautical Radio of Thailand at the moment delivered a policy to recruit the company's employees to volunteer to help organize this prestigious event that welcomes hundreds of worldwide dignitaries and executives from all segments of the aviation industry. I was willing to be part of this moment and hoped to help the company succeed in doing this job without any pay from the company. Under the supervision of Ms. Tipaporn Nippakakorn, Vice President (Human Resource), I was assigned to take care of the conference and seminar rooms at the Renaissance Hotel, Bangkok.

**Contributions** : Help prepare documents, organize meeting rooms

**Benefits** : Overall, the company succeeded in organizing this summit which brought and strengthen collaboration and understanding between global aeronautical organizations. My personal benefits include friendship with other employees from various departments of the company and a vision of the future of aviation industry gathered during the conference and seminar attendance. Most importantly, I learn to volunteer myself to contributing to the organization and aviation communities without anything monetary in return.

## REFERENCES

- Ms. Tipaporn Nippakakorn

**Position** Vice President (Human Resource)

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**Tel.** (+66) 2285-9179

- Dr. Chalermek Intanagonwiwat

**Position** Senior Software Engineer

**Address** Cisco Systems, Inc., California, USA

**Email** cintanag@cisco.com

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- Mr. Pongnarin Anantasirijinda

**Position** Director of Air Traffic Data Systems Engineering Department

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- Asst. Prof. Dr. Teerasit Kasetkasem

**Position** Assistant Professor of Electrical Engineering

**Address** Electrical Engineering Department, Kasetsart University, Bangkok, Thailand, 10900

**Email** fengtsk@ku.ac.th

**Tel.** (+66) 2942-8555 ext 1536

- Dr. Supasate Choochaisri

**Position** Co-founder and Operations Manager

**Address** Larngear Technology Co., Ltd., Software Park Bld. Nonthaburi, Thailand 11120

**Email** supasate.c@gmail.com

**Tel.** (+66) 2584-6064

## INTERESTS AND HOBBIES

Jazz and blues guitar, photography, bodybuilding/aerobic exercise, cooking, swimming