Lim Boon Ping

CONTACT INFORMATION	A-15-06 Aseana Puteri Condominium, Jln. Puteri 9/1, Bandar Puteri, Puchong, Selangor, Malaysia	*Cell: (60) 12 3180321* *Email: boonping.lim@gmail.com*
NATIONALITY	Malaysia	

RESEARCH INTEREST

I am primarily interested in the R&D of large-scale wired/wireless group communication and AV quality-of-services. In addition, I am interested in embedded system design.

EDUCATION

Multimedia University, Cyberjaya, Malaysia

Master of Science in Information Technology, July 2006

- Thesis Topic: Mitigation of SYN-flooding attack using high speed programmable network processor

B.Sc (Hons) of Information Technology, November 2002

- Major: Software Engineering
- CGPA: 1st Class Honours (3.82 out of 4.00)
- Thesis title: Developing a distributed stock exchange application using CORBA.

Disted-Stamford College Penang & University Science Malaysia

Diploma in Computer Science and Information Technology

- CGPA: 1st Class Honours (3.81 out of 4.00)

PROFESSIONAL EXPERIENCE

Panasonic R&D Center Malaysia

Senior R&D Engineer, Project Manager
(August 2005 – current)

- 5++ years of R&D experiences in Panasonic Corporate R&D
  - Design & develop R&D software prototype for next 3-5 years technology,
  - Drives patent activities and write invention disclosures,
  - Participate in IETF/IRTF standardization activities.
- 4 US/JP patents filed to date with extensive worked on research problem identification, prior art search, patent idea generation, proposal defense and invention disclosure drafting.
- Lead a group of 5 engineers specialized in AV Communication Protocol of Advanced Technology Development Group.
- Experience in developing software on PC-based and embedded linux platform (Panasonic *Uniphier* AM33/AM34 Processor) using C/C++.
  - Dual-source multi-receivers (up to 99 receivers) application layer multicast-based HD video streaming on Panasonic HD Telepresence System.
    - Major contributions are
      - bandwidth fair, QoS loss-handled optimized streaming

path convergence algorithm.
        - Prediction tree-based network latency and bandwidth estimation for predictive and non-intrusive network measurement.
        - Kernel-based high speed packet replication mechanism by hacking on linux kernel IP stack.
        - Call control middleware, integrating with Panasonic HD Telepresence System (SIP, AV QoS etc.) to support application layer multicast-based small group communication.
    - Product prototype available at Panasonic Corporation News.
- Wired/wireless multi-node AV streaming for targeted for IP camera, digital signage, mobile phone and tele-presense system
    - Major contributions are
        - Wired/Wireless optimized path construction algorithm, incorporating layer-2 parameter for cross-layer optimization.
        - AV packet error resilience mechanism achieving near-zero loss rate AV QoS during route convergence with predictive route convergence time, adaptive rate control and automatic retransmission request (ARQ).
        - Loss, delay and jitter-resilient bandwidth measurement mechanism.
- Automatic network calibration and Internet-like network traffic emulation for network-based product verification and testing using automated test framework (based on Starbed by Japan Advanced Institute of Science & Technology).
    - Major contributions are
        - Define Internet-like network conditions: loss, delay, jitter, bandwidth criteria & expected path construction/AV quality.
        - Design a 30 nodes testbed consists of HD Presence reference boards & network emulator (netem, dummyNet).
        - Lead and conduct functional, performance, stress test via manual, automated and semi-automated test method.
- On-demand MPEG2 TS-PS AV transcoding for Blu-ray Recoder and DVD-Recorder playback compatibility on Panasonic Uniphier processor, integrated with Universal Plug-and-Play (UPnP) stack for automated AV transcoding service discovery, advertisement and control.
        - Analyzed and mapped Blu-ray metadata format to DVD IFO format.
        - Developed a prototype to demonstrate MPEG TS-PS transcoding and playback via supporting conversion of Blu-ray clip info, play list and stream metadata to DVD IFO format, using C on RedHat9.
        - Configured and cross-compiled prototype, HTTP server and UPnP framework to *Uniphier* embedded platform.
- Reliable AV content recovery system with distributed AV content storage, XOR-pairing & reconstruction, integrated with UPnP for automatic corrupted data recovery in home network.
        - Designed and developed a prototype to demonstrate AV

content aware XOR-ing with distributed pairing file search, parity processing and storage, and corrupted content reconstruction capabilities, leveraged on UPnP using C/C++ in Fedora Core 3.

- Distributed media service across CE devices, leveraging on remote AV plug-in for home network media access, integrated with Network AV Framework for AV data encode/decode/mux/demux/transcoding/down-sampling (distributed and collaborative AV communication and processing).
  - Identified challenges of expanding existing multimedia architecture to CE-based network environment.
  - Analyzed requirement and designed in detail architecture, components model, process flow, messaging scheme and API for distributed media service discovery and control.
  - Implemented PC-based prototype to demonstrate distributed media plug-in collaboration and practical problems/solutions addressed in patented idea, leveraged on UPnP using C/C++ in Fedora Core 3.
  - UPnP, CORBA and ICE middleware exploration & porting to *Uniphier* Platform for performance benchmark.

Multimedia University & Intel Technology Malaysia

Research Officer/ Intel Scholar
(September 2002 – July 2005)

- Designed and implemented SYN-flooding denial-of-service attacks detection and defense system on Intel IXP1200/2400 network processor platform.
- Analyzed and evaluated the performance and limitations of various proposed approaches in combating DDoS, especially towards SYN-flooding.
- Designed and developed detection and defense algorithms for syn-flooding attacks.
- Implemented algorithms on Intel IXP network processor using microcode at data plane and C on XScale processor at control plane.
- Experienced in configuring, compiling and using GCC cross compiler toolchain for embedded system development.
- Designed and set up a testbed environment for hardware-based performance benchmarking and evaluation.
- In-depth knowledge of TCP/IP and network security.
- Other tasks included research of topics for network processor introductory class and assist in teaching for undergraduates Computer Network lab sessions.

IBM Malaysia

Intern
(May 2001 – Aug 2001)

PUBLICATIONS

Patent

1. (WO/2009/153945) COMMUNICATION CHANNEL BUILDING DEVICE AND N-TREE BUILDING METHOD
   International Application No.: PCT/JP2009/002647

2. (WO/2009/098748) TERMINAL AND N-TREE CONSTRUCTING METHOD
   International Application No.: PCT/JP2008/004017
3. Apparatus and Method for Network Latency Prediction Using Optimal Target Node Sampling
4. Apparatus and methods for Terminal Cluster Formation in Terminal Relay Type Multi-point Communication

Internet Draft

"ALM Middleware API", draft-lim-irtf-sam-alm-api-00.txt.

Conference Paper

Thilmee Baduge, Lim Boon Ping, Kunio Akashi, Jason Soong, Kenichi Chinen, Ettikan K.K., Eiichi Muramoto, "Functional and Performance Verification of Overlay Multicast Applications – a Product Level Approach", in proc. of IEEE Consumer Communications & Networking Conference, Jan 2010.

Khoa T.Phan, Nam Thoai, Eiichi Muramoto, Lim Boon Ping, Ettikan K.K., and Tan Pek Yew, "Treemap - The Fast Routing Convergence Method for Application Layer Multicast", in proc. of IEEE Consumer Communications & Networking Conference, Jan 2010.

Jonathan Tan Ming Yu, Lim Boon Ping, Ettikan K.K., Thilmee Baduge, Eiichi Muramoto, "Design and Implementation of Dynamic Join/Leave Application Layer Multicasting on PeaksProII", 27th Annual Panasonic Technology Symposium, Dec 2009.

Lim Boon Ping, Ettikan K.K, Lin En Shu, Truong Khoa Phan, Nam Thoai, Eiichi Muramoto and Tan Pek Yew, "Bandwidth Fair Application Layer Multicast for Multi-party Video Conference Application", in proc. of IEEE Consumer Communications & Networking Conference, Jan 2009.

Lim Boon Ping, Lin En Shu, Ettikan K.K, Eiichi Muramoto and Tan Pek Yew, "Application of the ALM Technology on PeaksPro II", 26th Annual Panasonic Technology Symposium, December 2008.

Lim Boon Ping, Ettikan K.K, Tan Pek Yew, Eiichi Muramoto and Taisuke Matsumoto, "Application Layer Multicast Video Conference", 25th Annual Matsushita Technology Symposium, December 2007.

Lim Boon Ping, Ettikan K.K, Tan Pek Yew, Miyake Yasushi and Naohisa Tanabe, "AV Content Reliability in Home Network", 24th Annual Matsushita Technology Symposium, December 2006.

Lim Boon Ping, Ang Boon Poah, Ettikan K.K, Lam Yoke Khei, "Performance Tests on Distributed Real-Time and Embedded Middleware", In Proceedings of M2USIC International Symposium, November 2006.

Ettikan Kandasamy Karuppiah, Lim Boon Ping and Tan Pek Yew, "Effect of AV Traffic on UPnP Advertisements in a Home Network Environment", In Proceedings of IEEE International Conference of Networking (ICON), September 2006.

Lim Boon Ping, Md Safi Uddin, "Synmon Architecture for SYN-flooding Defense

Using Network Processor", In Proceedings of Asia Pacific Conference on Communication (APCC), October 2005.

Lim Boon Ping, Md Safi Uddin, "Statistical-based SYN-flooding detection using programmable network processor", In Proceedings of IEEE International Conference on Information Technology and Applications (ICITA), July 2005.

Lim Boon Ping, Md Safi Uddin, "A proposition towards mitigation Of DDoS attacks using high speed programmable network processor", In Proceedings of M2USIC International Symposium, October 2003.

Toufik Taibi, Lim Boon Ping, Ng Sheau Wen, Lai Kiat Sing, Chew Keow Lim, "Developing a distributed stock exchange application using CORBA", In Proceedings of IEEE Student Conference on Research and Development, August 2003.

Book Chapter

Ettikan K.K, Jonathan Tan Ming Yu, Lim Boon Ping, Thilmee Baduge, Eiichi Muramoto. (2011). Overlay Multimedia Streaming Service for Consumer Electronics Devices. In John Buford, Advances in Next Generation Services and Service Architectures. River Publishers.

LANGUAGE PROFICIENCY

Chinese – Excellent, English – Good, Malay – Good, Japanese – Basic

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AWARDS / CERTIFICATION

2009 Panasonic R&D Center Malaysia Best Employee Award

24th Annual Matsushita Symposium Best Presentation Award

Grant recipient of Cradle Investment Programme for project entitied "Robotic Eye Inside Pipe"

Mentor of Cradle Investment Programme by Malaysian Government (to nurture new entrepreneur) based on expertise in AV processing & networking.

Intel® Research Scholar with MYR ~100k grant awarded

Sun Certified Java Programmer (Java 2 Platform 1.4)

Full scholarship under PTPTN Malaysian Government Educational Fund for achieving First Class Honour Bachelor Degree

Dean Award for all 7 semesters during Bachelor Degree

Best Student Award for all 4 Semesters during Diploma

REFERENCES

Mr. Eiichi Muramoto

Staff Engineer, Visual Communication Development Office, Panasonic Corporation

muramoto.eiichi@jp.panasonic.com

Relationship: Project Stakeholder for Application Layer Multicast R&D for Panasonic KX-VC 500 Telepresence System.

Dr. Ettikan Kandasamy Karrupiah

General Manager, Principal Engineer of Panasonic R&D Center Malaysia

ettikank.k@my.panasonic.com

Relationship: Direct superior in Panasonic R&D Center Malaysia.