

Pierre Lemarinier

University of Paris-Sud
Laboratoire de Recherche en Informatique
Bât 490, room 108
91405 Orsay CEDEX France

Voice : (033) 1 69 15 42 22
Fax : (033) 169 15 65 86
Email : pierre.lemarinier@lri.fr
Web : <http://www.lri.fr/lemarinier>

Education

Ph.D. – Computer Science, University of Paris-Sud (2006)
Dissertation : *Fault Tolerant MPI for Global Computing Systems*
Advisors : Prof. Joffroy Beauquier and Prof. Franck Cappello
M.S. – Distributed Computing, University of Paris-Sud (2002)
B.S. – Computer Science, University of Caen (2001)

Research Interests

Research areas of interest include parallel computing, Grid computing, fault tolerance and scheduling.

Research Experience

2006-present – POSTDOC, INRIA Futurs/University of Paris-Sud

2005-2006 – RESEARCH AND TEACHING ASSISTANT, LRI/University of Paris-Sud

Have designed, implemented and compared to previous protocols a coordinated checkpointing protocol that blocks MPI communications during synchronization phase (SC2006). Have designed, implemented and evaluated a self-stabilization spanning tree algorithm for computational Grids (SSS2006, IPDPS2007).

2002-2005 – PH.D. STUDENT, LRI/University of Paris-Sud

Have designed, implemented and compared a pessimistic message logging protocol (SC2003), acausal message logging protocol (cluster2004, IPDPS2005) and a coordinated checkpointing protocols (cluster 2003) for MPICH and MPICH2.

2002 – M.S. INTERNSHIP, LRI/University of Paris-Sud

Area of fault tolerance in large scale parallel and distributed systems. Have designed and implemented pessimistic message logging for MPICH using remote servers for storing message payload (SC2002).

Publications

Peer-reviewed International Journal Articles

1. Aurélien Bouteiller, Pierre Lemarinier, Géraud Krawezik, Franck Cappello. *Coordinated Checkpoint Versus Message Log for Fault Tolerant MPI*. In Int Journal of High Performance Computing and Networking (**IJHPCN**), 2(2/3/4) :146-155, 2004. Inderscience publishers.
2. Aurelien Bouteiller, Hinde-Lilia Bouziane, Thomas Herault, Pierre Lemarinier, Franck Cappello. *Hybrid Preemptive Scheduling of MPI Applications on the Grids*. In Int. Journal of High Performance Computing and Applications (**IJHPCA**), 20(1), 2006, p77-90, SAGE Publications.
3. Aurelien Bouteiller, Thomas Herault, Geraud Krawezik, Pierre Lemarinier, Franck Cappello. *MPICH-V Project : A Multiprotocol Automatic Fault Tolerant MPI*. In Int. Journal of High Performance Computing and Applications (**IJHPCA**), 20(3), 2006, p319-333, SAGE Publications.
4. Darius Buntinas, Camille Coti, Thomas Herault, Pierre Lemarinier, Laurence Pilard, Ala Rezmerita, Eric Rodriguez, Franck Cappello. *Blocking vs. Non-Blocking Coordinated Checkpointing for Large-Scale Fault Tolerant MPI*. To appear in Future Generation Computer Systems (**FGCS**), Elsevier.

Peer-reviewed International Conference Papers

1. George Bosilca, Aurélien Bouteiller, Franck Cappello, Samir Djilali, Gilles Fédak, Cécile Germain, Thomas Héroult, Pierre Lemarinier, Oleg Lodygensky, Frédéric Magniette, Vincent Néri and Anton Selikhov. *MPICH-V : Toward a Scalable Fault Tolerant MPI for Volatile Nodes*. In Int. Conf. for High Performance Computing and Networking (**SC2002**) , Baltimore USA, november 2002. IEEE/ACM.
2. Aurélien Bouteiller, Franck Cappello, Thomas Héroult, Géraud Krawezik, Pierre Lemarinier and Frédéric Magniette. *MPICH-V2 : A Fault Tolerant MPI for Volatile Nodes Based on Pessimistic Sender Based Message Logging*. In Int. Conf. for High Performance Computing, Networking and Storage (**SC2003**), Phoenix USA, november 2003. IEEE/ACM.
3. Aurélien Bouteiller, Pierre Lemarinier, Géraud Krawezik, Franck Cappello. *Coordinated Checkpoint Versus Message Log for Fault Tolerant MPI*. In Int. Conf. on Cluster Computing (**Cluster 2003**), Hong-kong, december 2003. IEEE.
4. Pierre Lemarinier, Aurélien Bouteiller, Thomas Héroult, Géraud Krawezik, Franck Cappello. *Improved Message Logging versus Improved Coordinated Checkpointing for Fault Tolerant MPI*. In Int. Conf. on Cluster Computing (**Cluster 2004**), San-Diego USA, september 2004. IEEE.
5. Aurelien Bouteiller, Boris Collin, Thomas Herault, Pierre Lemarinier, Franck Cappello. *Impact of Event Logger on Causal Message Logging Protocols for Fault Tolerant MPI*. In Int. Parallel and Distributed Processing Symposium (**IPDPS 05**), Denver USA, April 2005. IEEE/ACM.

6. Camille Coti, Thomas Herault, Pierre Lemarinier, Laurence Pilard, Ala Rezmerita, Eric Rodriguez, Franck Cappello. *Blocking VS. Non-Blocking Coordinated Checkpointing for Large-Scale Fault Tolerant MPI*. In Int. Conf. for High Performance Computing, Networking, Storage and Analysis (**SC2006**), Tampa, USA, November 2006. IEEE/ACM.
7. Willam Hoarau, Pierre Lemarinier, Thomas Herault, Eric Rodriguez, Sébastien Tixeuil, Franck Cappello. *FAIL-MPI : How Fault-Tolerant is Fault-Tolerant MPI ?*. In Int. Conf. on Cluster Computing (**Cluster 2006**), Barcelone, Espagne, september 2006. IEEE.
8. Thomas Herault, Pierre Lemarinier, Olivier Peres, Laurence Pilard, Joffroy Beauquier. *Self-Stabilizing Spanning Tree Algorithm for Large Scale Systems*. Brief Announcement in Eighth International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2006), Dallas, USA, November 2006, Springer.
9. Thomas Herault, Pierre Lemarinier, Olivier Peres, Laurence Pilard, Joffroy Beauquier. *A Model for Large Scale Self-Stabilization*. In 21st Int. Parallel and Distributed Processing Symposium (**IPDPS 2007**), Long Beach, California USA, Mars 2007. IEEE.

Peer-reviewed International Workshop Papers

1. Aurelien Bouteiller, Hinde-Lilia Bouziane, Thomas Herault, Pierre Lemarinier, Franck Cappello. *Hybrid Preemptive Scheduling of MPI Applications on the Grids*. In Int. Workshop on Grid Computing 2004 (**Grid 2004**), Pittsburgh USA, November 2004. IEEE/ACM.

Non Peer-reviewed International Workshop Papers

1. Michael Cadilhac, Thomas Herault and Pierre Lemarinier. *Message Relaying Techniques for Computational Grids and their Relations to Fault Tolerant Message Passing for the Grid*. In 3rd workshop Coregrid, Paris, January 2006.

International Poster Session

1. Pierre Lemarinier, Aurélien Bouteiller, Franck Cappello. *MPICH-V3 : A hierarchical fault tolerant MPI for Multi-Cluster Grids*. In High Performance Networking and Computing (**SC2003**) poster session, Phoenix USA, November 2003. IEEE/ACM.

Peer-reviewed International Student Workshop Papers

1. Thomas Héroult and Pierre Lemarinier. *A Rollback-Recovery Protocol on Peer to Peer Systems*. In Proceedings of MOVEP'2002 Summer School pages 313-319, Nantes, June 2002.

Ph.D. thesis

Speciality : Computer Science

Obtained at : University Paris-Sud XI - Orsay - France
Laboratoire de Recherche en Informatique
Parallelism team

Title : Fault Tolerant MPI for Global Computing Systems

Advisors : Joffroy Beauquier and Franck Cappello

Defense Date : November 30th, 2006

Committee Members :

M. Joffroy BEAUQUIER,	Professor, University Paris XI Advisor (jb@lri.fr)
M. Franck CAPPELLO,	Senior Computer Scientist, INRIA Advisor (fci@lri.fr)
M. Bill GROPP,	Senior Computer Scientist, MCS Argonne National Laboratory Examiner (gropp@mcs.anl.gov)
Mme Christine MORIN,	Senior Computer Scientist, INRIA Reviewer (christine.morin@irisa.fr)
M. Franck PETIT,	Professor, University of Picardie Jules Verne Reviewer (franck.petit@u-picardie.fr)
Mme Brigitte ROZOY,	Professor, University Paris XI Committee president (rozoy@lri.fr)

Talks

- **MOVEP'2002 Summer School** (Nantes, France), paper presentation : A *Rollback-Recovery Protocol on Peer to Peer Systems* (06/20/2002)
- **ACI GRID CGP2P** (Paris, France) : *Message logging protocols : pessimistic, optimistic and causal* (03/17/2003)
- **SC2003** (Phoenix, USA), MPICH-V3 poster presentation : *MPICH-V3 : A hierarchical fault tolerant MPI for Multi-Cluster Grids* (11/18/2003)
- **Cluster 2004** (San Diego, USA), paper presentation : *Improved Message Logging versus Improved Coordinated Checkpointing for Fault Tolerant MPI* (09/21/2004)
- **MCS Argonne National Laboratory**, seminar : *MPICH-V project presentation* (04/26/2005)
- **LARIA** (Amiens France), seminar : *Coordinated checkpointing protocols for message passing systems* (10/19/2006)
- **QosCos Grid European project** (Barcelona, Spain) : *MPI basics Presentation* (10/25/2006)
- **IRISA** (Rennes France), seminar : *Coordinated checkpointing protocols for message passing systems* (02/01/2007)
- **QosCosGrid European Project** (Paris France) : *QCG-OMPI : specification of the MPI library developed for QosCosGrid* (02/26/2007)
- **Crestic** (Reims France), seminar : *Coordinated checkpointing protocols for message passing systems* (04/05/2007)

Collaborations

- I am involved in a collaborative project called MPI-V between the INRIA Grand-Large team, Argonne National Laboratory (ANL) and the University of Tennessee, Knoxville (UTK). The goal of our collaboration is to enable and evaluate fault tolerance in two major implementations of MPI : MPICH and OpenMPI
- I participated to ACI GRID CGP2P, a French ministry project linking research teams in the area of computational Grids, and I organized one of their meetings
- I am involved in a collaboration between parallelism team and SUPELEC school in the security domain for Grids environments
- I organized the parallelism team seminar series from 2002 to 2003
- I organized the parallelism and Grand-Large teams seminar series from 2003 to 2004
- I am involved in the QosCos Grid European project, which aims at building Grid technology for simulations of complex system applications

Reviewing activities

I reviewed papers for these conferences and journals :

HIPC 2004	JPDC 2004	OPODIS 2004	HCW 2005
Europar 2005	OPODIS 2005	IPDPS 2005	Journal of Grid Computing 2005
Algotel 2006	SSS 2006	Journal of Grid Computing 2006	OPODIS 2006
GPC'2007	ICDCS 2007	HPDC 2007	PODC 2007
Algotel 2007	Europar 2007	SC07	EuroPVM/MPI'2007

Teaching

Courses

2002-2003

- * **Computer science introduction (B.S. +1)**
- * **CAML functional programming approach (B.S. +2)**

2003-2004

- * **UNIX in practice (B.S. +3)**
- * **Systems Administrator**

2004-2005

- * **UNIX in practice (B.S. +3)**
- * **Distributed Systems (B.S. +4)**
- * **MPI (M.S.)**

2005-2006

- * **Distributed Systems (B.S. +4)**
- * **UNIX in practice(B.S. +3)**
- * **IFIPS 1 (engineer, third year) - Systems (B.S. +3)**
- * **Distributed Systems (M.S.)**
- * **FIIFO 5 (engineer fifth year) : Distributed Systems (M.S.)**

2006-2007

- * **MPI (M.S.)**

Graduate Intern Co-Advising

Fatiha Boubache, M.S. internship :	Design and evaluation of replicated logging resources, obtained 2006
Camille Coti, M.S. internship :	Design and evaluation of a coordinated checkpointing protocol for MPICH2, obtained 2006
Michael Cadilhac, B.S. internship :	Evaluation of message logging relay techniques, obtained 2006
Olivier Pérès, M.S. internship :	Generic self-stabilizing algorithm for building topology based on description, obtained 2005
Abdeslam Boularias, M.S. internship :	MPICH-V3 : a fault tolerant for grids, obtained 2005
Mathieu Betrancourt, B.S. internship :	Parallel application benchmark for fault tolerant MPI, obtained 2005
Samuel de Medeiros, B.S. internship :	Computer booking tools : restraint logging and checkpoint-restart mechanism, obtained 2005
Alexandre Szmulewicz, B.S. internship :	Computer booking interface for clusters, obtained 2005
Boris Collin, M.S. internship :	Causal message logging protocols for fault tolerance in MPICH-V, obtained 2004
Hinde-Lilia Bouziane, M.S. internship :	Hybrid scheduling for MPI inside clusters, obtained 2004
Smail Adjou, B.S. internship :	Sharing files in adhoc networks, obtained 2004

References

Prof. Franck Cappello (Thesis advisor) University of Paris-Sud/INRIA (+33) 6 70 31 03 39 fci@lri.fr	Prof. Joffroy Beauquier (Thesis advisor) University of Paris-Sud/LRI (+33) 1 69 15 67 96 jb@lri.fr
Prof. Bill Gropp ANL/MCS (+1) 630 252 4318 gropp@mcs.anl.gov	Prof. Rusty Lusk ANL/MCS (+1) 630 252 7852 lusk@mcs.anl.gov