

Civil-Comp Proceedings: 90

**Proceedings of the
First International Conference on
Parallel, Distributed and Grid Computing
for Engineering**

Civil-Comp Proceedings:

Proceedings of the Ninth International Conference on Computational Structures Technology

Edited by: B.H.V. Topping, M. Papadrakakis

Proceedings of the Sixth International Conference on Engineering Computational Technology

Edited by: M. Papadrakakis, B.H.V. Topping

Proceedings of the Eleventh International Conference on Civil, Structural and Environmental Engineering Computing

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Proceedings of the Ninth International Conference on Civil and Structural Engineering Computing

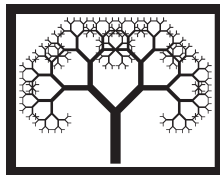
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First International Conference on
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CIVIL-COMP PRESS

© Civil-Comp Ltd, Stirlingshire, Scotland

published 2009 by

Civil-Comp Press

Dun Eaglais, Kippen

Stirlingshire, FK8 3DY, UK

Civil-Comp Press is an imprint of Civil-Comp Ltd

Civil-Comp Proceedings: 90

ISSN 1759-3433

ISBN 978-1-905088-27-0 (Book)

ISBN 978-1-905088-28-7 (CD-Rom)

ISBN 978-1-905088-29-4 (Combined Set)

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Cover Image: Mihály Pollack (1773-1855), for further information please see the Preface page v.

Printed in Great Britain by Bell & Bain Ltd, Glasgow

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Preface

This volume comprises the summaries of contributed papers presented at The First International Conference on Parallel, Distributed and Grid Computing for Engineering (PARENG 2009) held at the Pollack Mihály Faculty of Engineering, University of Pécs, Hungary, 6-8 April, 2009. The full papers from the conference are available on the accompanying CD-ROM.

Mihály Pollack (1773-1855) was one of the most outstanding architects of Hungarian neo-classicism. He studied in Austria, spent two years in Italy and finally arrived at Budapest in 1798. He worked for several years in Pest and from 1808 was a member of the Hungarian Beautifying Committee. He planned several private and public buildings, including the Theatre and Assembly Rooms in Warsaw, and participated in the reconstruction of the cathedral in Pécs. One of his most significant designs is the Hungarian National Museum in Budapest completed during 1846. The Faculty of Engineering includes a wide range of engineering disciplines and architecture - so the faculty's name rightly commemorates the leading neo-classical architect of Central Europe from the first half of the nineteenth century: Mihály Pollack.

The University of Pécs is the successor of the first Hungarian university, established by Louis the Great in 1367. Between 1970 and 1995, the Pollack Mihály College of Engineering was a separate institute; but in 1995 it joined as an engineering college to become part of the University of Pécs. Finally, in 2004, it became the Faculty of Engineering of the University of Pécs.

Each year since 2006, the Faculty of Engineering has organised advanced courses for PhD students and researchers with an interest in High Performance Computing. In addition, High Performance Computing has been well represented in the presentations made at the International Symposiums in Engineering, held annually, in the Faculty, for young researchers and PhD students. The University is currently embarking on the construction of a new Science Building which will house a regional High Performance Computing Centre. It was therefore felt particularly appropriate to hold *The First International Conference on Parallel, Distributed and Grid Computing for Engineering* at the Pollack Mihály Faculty of Engineering. The conference also provided a perfect opportunity to discuss the theoretical and practical problems in the development of a new MSc course in *Engineering Informatics*, at the Pollack Mihály Faculty of Engineering, where one of the specialisations will be High Performance Computing in Engineering.

We would like to thank key members of the Faculty who have helped us with the realisation of this conference: Dr Bálint Bachmann (Dean of the Faculty), Dr Tibor Kukai (Vice Dean) and Dr Ella Regina Pais (Vice Dean). We are grateful for their enthusiasm and encouragement of this and other aspects of the development of engineering informatics and high performance computing in the Faculty.

The special sessions included in this volume of Proceedings are:

- Planning for Petaflop Computing
organised by D.R. Emerson
- Domain Decomposition
organised by J. Kruis
- Parallel Genetic and Evolutionary Algorithms: Methods and Applications
organised by B.H.V. Topping and P. Iványi

We are particularly grateful to Dr Emerson and Dr Kruis for organising their special sessions. The following sessions are also included in this volume:

- Parallel and Distributed: Programming and Systems
- Computational Engineering on Special Purpose Hardware
- Graphics and Visualisation

- Grid Computing
- Grid Computing: Engineering Applications
- Service Oriented Computing
- Cluster Computing
- Dynamic Load Balancing
- Particle Problems
- Structural Mechanics
- Multigrid Methods
- Multiscale Problems
- Computational Fluid Dynamics

The Invited Lectures from PARENG 2009 are published in: Parallel, Distributed and Grid Computing for Engineering, B.H.V. Topping and P. Iványi, (Editors), Saxe-Coburg Publications, Stirlingshire, Scotland, 2009.

We would like to thank the members of the Editorial Board of The First International Conference on Parallel, Distributed and Grid Computing for Engineering: Prof. H. Adeli, USA; Dr H. Akiba, Japan; Dr N.E. Alaa, Morocco; Dr A. Al-Dubai, UK; Dr O. Allix, France; Mr J.M. Alonso, Spain; Dr T. Altrutz, Germany; Prof. E. Aulisa, USA; Dr L. Badea, Romania; Dr R. Banos Navarro, Spain; Prof. J.W. Baugh, USA; Prof. M.L. Bittencourt, Brazil; Prof. Z. Bittnar, Czech Republic; Prof. P.-A. Boucard, France; Prof. P. Bouvry, Luxembourg; Dr J. Brozovsky, Czech Republic; Dr J. Buenabad Chávez, Mexico; Dr. X. Cai, Norway; Prof. L. Champany, France; Prof. A.H.C. Chan, UK; Dr H-M. Chen, Taiwan; Prof. B.N. Chetverushkin, Russia; Dr K.W. Cho, Korea; Dr F. Cirak, UK; Prof. J.Y. Cognard, France; Prof. M. Cross, UK; Dr C. Di Napoli, Italy; Dr. M. Dolenc, Slovenia; Prof. D. El Baz, France; Dr D. Emerson, UK; Dr D. Eyheramendy, France; Dr V. Galiano, Spain; Prof. J.D. García, Spain; Prof. W. Gentzsch, Germany; Dr C. Gil Montoya, Spain; Prof. L. Giraud, France; Dr J M Gonzalez Vida, Spain; Dr G.A. Gravvanis, Greece; Prof. A.A. Groenwold, South Africa; Prof. O. Hassan, UK; Dr C.S. Ierotheou, UK; Prof. B. Jeremic, USA; Prof. P.K. Jimack, UK; Dr A. Kaceniauskas, Lithuania; Prof. Peter Kacsuk, Hungary; Dr A.I. Khan, Australia; Prof. C.-W. Kim, USA; Dr W.J. Knottenbelt, UK; Prof. M. Krafczyk, Germany; Dr. J. Kruis, Czech Republic; Dr O. Kurc, Turkey; Prof. P. Ladeveze, France; Prof. L. Laemmer, Germany; Dr. M. Leps, Czech Republic; Dr M. Li, UK; Prof. S.H. Lo, Hong Kong; Dr R.I. Mackie, UK; Prof. F. Magoules, France; Dr O. Medek, Czech Republic; Prof. A. Meyer, Germany; Dr P.D. Michailidis, Greece; Prof. V. Migallón, Spain; Dr H.F. Migallon Gomis, Spain; Dr G.F. Moita, Brazil; Prof. K. Morgan, UK; Prof. J. Morrison, Ireland; Prof. D.T. Nguyen, USA; Prof. G.P. Nikishkov, Japan; Prof. P.A. Pagliosa, Brazil; Prof. J.B. Paiva, Brazil; Dr M. Paprzycki, Poland; Dr B. Patzak, Czech Republic; Prof. T. Pena, Spain; Dr J. Penades, Spain; Dr R. Putanowicz, Poland; Dr A. Rama Mohan Rao, India; Prof. E. Rank, Germany; Prof. M. M. Resch, Germany; Prof. J.R. Roche, France; Dr G. Romanazzi, Portugal; Prof. M.L. Romero, Spain; Dr. D. Rypl, Czech Republic; Prof. M. Sarkis, USA; Prof. M. Schaefer, Germany; Dr A.K. Slone, UK; Prof. V.E. Sonzogni, Argentina; Mr V. Stankovski, Slovenia; Dr D.C. Sternel, Germany; Dr S-I. Sugimoto, Japan; Dr A. Suzuki, Japan; Prof. J.C.F. Telles, Brazil; Prof. D. Tremeur-Dervout, France; Prof. B. Vinter, Denmark; Prof. E von Lavante, Germany; Dr C. Walshaw, UK; Dr L. Wang, Germany; Dr T. Yamada, Japan;

Finally we would like to thank: Marianna Regdon (Pécs), who helped us with the conference arrangements; and Jelle Muylle and Rosemary Brodie who assisted with the design and proof reading of this book.

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