

Table of Contents

Preface

Handy 21

The Raw Processor: A Composeable 32-Bit Fabric for Embedded and General Purpose Computing	3
<i>Michael Taylor, Jason Kim, Jason Miller, Fae Ghodrat, Ben Greenwald, Paul Johnson, Walter Lee, Albert Ma, Nathan Shnidman, David Wentzlaff, Matt Frank, Saman Amarasinghe and Anant Agarwal</i>	
The Raw Processor: A Composeable 32-Bit Fabric for Embedded and General Purpose Computing (Presentation)	7
<i>Michael Taylor</i>	
Direct Addressed Caches for Reduced Power Consumption	21
<i>Emmett Witchel, Sam Larsen, C. Scott Ananian and Krste Asanović</i>	

Network 21

A Scalable Location Service for Geographic Ad Hoc Routing	45
<i>Jinyang Li, John Jannotti, Douglas S. J. De Couto, David R. Karger and Robert Morris</i>	
A Client-Server Approach to Virtually Synchronous Group Multicast: Specifications and Algorithms	75
<i>Idit Keidar and Roger Khazan</i>	
An Approach to Disconnected Operation in an Object-Oriented Database	103
<i>Sidney Chang and Dorothy Curtis</i>	
The Design and Implementation of an Intentional Naming System	121
<i>William Adjie-Winoto, Elliot Schwartz, Hari Balakrishnan and Jeremy Lilley</i>	
An End-to-End Approach to Host Mobility	159
<i>Alex C. Snoeren and Hari Balakrishnan</i>	
Reconsidering Internet Mobility	191
<i>Alex C. Snoeren, Hari Balakrishnan and M. Frans Kaashoek</i>	

IV

Span: An Energy-Efficient Coordination Algorithm for Topology Maintenance in Ad Hoc Wireless Networks	205
<i>Benjie Chen, Kyle Jamieson, Hari Balakrishnan and Robert Morris</i>	
The Cricket Location-Support System	237
<i>Nissanka B. Priyantha, Anit Chakraborty and Hari Balakrishnan</i>	
The Cricket Compass for Context-Aware Mobile Applications	267
<i>Nissanka Priyantha, Allen Miu, Hari Balakrishnan and Seth Teller</i>	
Proxy-Based Security Protocols in Networked Mobile Devices	301
<i>Matthew Burnside, Dwaine Clarke, Todd Mills, Andrew Maywah, Srinivas Devadas and Ronald Rivest</i>	

Systems

Rascal - A Resource Manager for Multi Agent Systems in Smart Spaces	323
<i>Krzysztof Gajos</i>	
Hybrid I/O Automata Revisited	335
<i>Nancy Lynch, Roberto Segala and Frits Vaandrager</i>	
A Unified Framework for Schedule and Storage Optimization	353
<i>William Thies, Frédéric Vivien, Jeffrey Sheldon and Saman Amarasinghe</i>	
Heads and Tails: A Variable-Length Instruction Format Supporting Parallel Fetch and Decode	383
<i>Heidi Pan and Krste Asanović</i>	
Analytical Cache Models with Applications to Cache Partitioning	403
<i>G. Edward Suh, Srinivas Devadas and Larry Rudolph</i>	
Dynamic Cache Partitioning for Simultaneous Multithreading Systems	429
<i>G. Edward Suh, Larry Rudolph and Srinivas Devadas</i>	
Effects of Memory Performance on Parallel Job Scheduling	445
<i>G. Edward Suh, Larry Rudolph and Srinivas Devadas</i>	

Perceptual Interfaces

SpeechBuilder: Facilitating Spoken Dialogue System Development	467
<i>James Glass and Eugene Weinstein</i>	
ORION: From On-line Interaction to Off-line Delegation	479
<i>Stephanie Seneff, Chian Chuu and D. Scott Cyphers</i>	

Plan-View Trajectory Estimation with Dense Stereo Background Models	491
<i>Trevor Darrell, David Demirdjian, Neal Checka and Pedro Felzenszwalb</i>	
Range Segmentation Using Visibility Constraints	509
<i>Leonid Taycher and Trevor Darrell</i>	
Integrated Face and Gait Recognition From Multiple Views	523
<i>Gregory Shakhnarovich, Lily Lee and Trevor Darrell</i>	
Audio-Video Array Source Separation for Perceptual User Interfaces . .	541
<i>Kevin Wilson, Neal Checka, David Demirdjian and Trevor Darrell</i>	
Reducing Drift in Parametric Motion Tracking	557
<i>Ali Rahimi, Louis-Philippe Morency and Trevor Darrell</i>	
Signal Level Fusion for Multimodal Perceptual User Interface	579
<i>John W. Fisher III and Trevor Darrell</i>	
Preserving the Freedom of Paper in a Computer-Based Sketch Tool . .	595
<i>Christine J. Alvarado and Randall Davis</i>	
Resolving Ambiguities to Create a Natural Computer-Based Sketching Environment	605
<i>Christine J. Alvarado and Randall Davis</i>	
Sketch Based Interfaces: Early Processing for Sketch Understanding . .	623
<i>Tevfik Metin Sezgin, Thomas Stahovich and Randall Davis</i>	
Free-Hand Stroke Approximation for Intelligent Sketching Systems . . .	643
<i>Tevfik Metin Sezgin</i>	
Naturally Conveyed Explanations of Device Behavior	649
<i>Michael Oltmans and Randall Davis</i>	
Knowledge Access	
Gathering Knowledge for a Question Answering System from Heterogeneous Information Sources	673
<i>Boris Katz, Jimmy Lin and Sue Felshin</i>	
Annotea: An Open RDF Infrastructure for Shared Web Annotations . .	689
<i>José Kahan, Marja-Riitta Koivunen, Eric Prud'Hommeaux and Ralph R. Swick</i>	
FIRE: An Information Retrieval Interface For Intelligent Environments	715
<i>Krzysztof Gajos and Ajay Kulkarni</i>	

Query by Attention: Visually Searchable Information Maps 725
Mark A. Foltz and Randall Davis

Collaboration

Design Principles for Resource Management Systems for Intelligent
Spaces 743
Krzysztof Gajos, Luke Weisman and Howard Shrobe

Project Oxygen: Pervasive, Human-Centric Computing – An Initial
Experience 765
Larry Rudolph

Author Index