SFI RESEARCH ACTIVITIES 1989-2002

	BIOLOGY	SOCIAL SCIENCES	PHYSICS & COMPUTATION	EVOLUTION	EMERGENCE/SELF-ORG	LEARNING AND ADAPTATION	NETWORKS	MODELING TOOLS
1985-87	Theoretical Immunology Matrix of Biological Knowledge Computational Biology Climatic Change and Biological Resources	Evolutionary Paths of the Global Economy	Computational Biology Modern Approaches to Large, Nonlinear Physical Systems	Climatic Change and Biological Resources				
1988-91 (88-89-90-91 AR)	Artificial Life Applied Molecular Evolution and Maturation of the Immune Response Foundations of Developmental Biology Pattern Recognition in Biological Sequences Somatic Mutation Organization of Organisms Glasses, Biomolecules and Evolution Theoretical Ecology Computational Science and Nucleic Acid Sequncing Matrix of Biological Knowledge Immune System Networks Models of Genomic Structure and Organization Evolution of Morphogenesis Theoretical Neurobiology Theory of Cortical Function Artificial Life	Economy as a Complex System Bounded Rationality Double Auction Markets Information Contagion Stock Market-Modeling Dynamics Economics and Public Policy Learning Algorithms Stochastic Approximation Self-Organized Criticality and Economics Coevolution and Game Behavior Technological Innovation Increasing Returns Human Cognition and Emotion Global Stability/Sustainable Human Society Evolution of Human Languages Evolution of Prehistoric Southwestern Societies Theory of Money and Financial Institutions Human Cognition and Emotion	Adaptive Computation Dynamics of Classifer Systems Dynamical Systems with Discrete Degrees Freedom Random Grammars Foundations of Genetic Algorithms Complexity, Entropy, Physics of Information Measuring and Characterizing Complexity Computational Mechanics Space Structures in High-dimensional Systems Scaling and Self-organized Criticality Computational Complexity	Applied Molecular Evolution and Maturation of the Immune Response Coevolution and Game Behavior Evolution of Human Languages Evolution of Prehistoric Southwestern Societies Glasses, Biomolecules and Evolution Evolutionary Model of Learning and Memory Evolutionn on Fitness Landscapes Evolutionary Model of Learning and Memory Evolutionn of Morphogenesis Coevolution to the Edge of Chaos	Foundations of Developmental Biology Pattern Recognition in Biological Sequences-Lapedes Stock Markets-Emergent Structure Dynamics of Innovation (BN)	Evolution of Human Languages Learning Algorithms Stochastic Approximation Cellular Games Complexity in Stochastic Media Evolutionary Model of Learning and Memory Theory of Cortical Function Adaptive Computation	Immune System Networks	Time Series Forecasting and Analysis Artificial Life Simulations of Nonlinear Dynamical Models Audification Tierra ECHO Computational Models and the Social Sciences
1992-94 (92-93-94 AR)	Theoretical Neurobiology Evolution of Structures in Neurobiology Neural Circuitry Learning and Memory in the Immune System Artificial Life Models of Genomic Structure and Organization Protein Folding and Engineering Molecular Diversity/Biotechnology Unified Theory of Biochemistry Toward a Theory of Biological Organization Computational Approaches to Genetic Data Protein Structure and Function Coevolving Networks/Protein Secondary Structure Evolutionary Dynamics on RNA Landscapes Morphological Complexity and Evolution Cortical Plasticity and Early Childhood Intervention Complex Systems Approach to Ecology	Building New Models for Changes in Organizations Cortical Plasticity and Early Childhood Intervention Aggregation and Disaggregation of Political Actors Evolution of Human Culture Economy as a Complex System Adaptation and Learning in the Economy Artificial Economies Learning in Knowledge-based Markets Cognition, Evolution and Complexity (Arthur) Project 2050/A Crude Look at the Whole Prediction/Mitigation of Natural Hazards Swarm	Adaptive Computation Classifer Systems Dynamical Systems w Discrete Degrees Freedom Foundations of Genetic Algorithms Neural Networks Evolving Cellular Automata Computation in Dynamical Systems Characterizing Complexity in Dynamical Systems Computational Mechanics Limits to Scientific Knowledge Optimization in Complex Adaptive Systems Complexity, Entropy, Physics of Information Scaling Laws/Self-Organized Critcality and Scaling Computational Approaches to Genetic Data Protein Structure and Function Coevolving Networks/Protein Secondary Structure Evolutionary Dynamics on RNA Landscapes Supervised Machine Learning	Evolution of Structures in Neurobiology Evolutionary Dynamics on RNA Landscapes Morphological Complexityand Evolution Evolution of Learning (Population Genetics) Cognition, Evolution and Complexity (Arthur) Tierra Evolution of Human Culture	Patterns in Chaotic Data in the Nervous System A Unified Theory of Biochemistry Underlying Structures in Seemingly Random Data Toward a Theory of Biological Organization Emergence of Universal Principals of Mind	Learning and Memory in the Immune System ECHO Evolution of Learning (Population Genetics) Swarm Emergence of Universal Principals of Mind Foundations of Neural Networks/Supervised Learning Immunologically-inspired Computer Security Cortical Plasticity and Early Childhood Intervention Learning in Knowledge-based Markets Adaptive Computation Adaptation to the Edge of Chaos Algorithmic Chemistry Learning and Adaptation in Robots/Situated Agents Cognition, Evolution and Complexity (Arthur)	Foundations of Neural Networks/Supervised Learning	Artificial Life ECHO Swarm Audification Tierra
1995-97 (95-97 AR)	Applied Molecular Evolution RNA Secondary Structure Computer Simulation of Evolutionary Dynamics Viral Dynamics of HIV Pediatric AIDS Analysis of Biological Data Models and Analysis of Biological Evolution Scaling and Biological Networks Models of Extinction Artificial Life	Dynamics of Human Cultural Change Culture Change in the Southwest Economy as a Complex System Artificial Stock Market Swarm Sugarscape Adaptation in Organizations (BN)	Computation in Physical and Biological Systems Computational Mechanices Evolving Cellular Automata Computation, Dynamics and Inference	Applied Molecular Evolution Computer Simulation of Evolutionary Dynamics Dynamics of Human Cultural Change Models and Analysis of Biological Evolution Models of Extinction	Self-Organized Criticality Models of Extinction	Adaptive Computation		Artificial Life Sugarscape Swarm Manufacturing and Supply Chain Management (BN)
1998-2000 (98-99-00 AR) (Web)	Immune System and Other Biological Models RNA Structures Biochemical Networks Biological Diversity and Ecological Complexity Biological Recovery and Innovation HIV Strains Molecular Signalling Networks Keck Program in Evolutionary Dynamics Epidemiology of Influenza and Malaria Biodiversity Loss in Complex Communities Genotype/Phenotype Maps Evolution of Physiological Adaptations Dynamics of Insect Societies Genetic Plasticity and Generation of Diversity Models of Extinction Self-Maintaining Organisms/Abstract Chemistry Evolution of Organismal Development Multilevel Selection Theory Artificial Life	Organizational Emergence Evolution of Language Network Structure/Small-world Networks Dynamics of Cultural Change: Unified Framework Co-evolution of Institutions and Preferences State and Market Formation Persistent Inequality Dynamics of Cultural Change: Unified Framework Co-evolution of Institutions and Preferences State and Market Formation Persistent Inequality Market Force, Ecology and Evolution Heterarchies Swarm	Computation in Physical and Biological Systems Evolutionary Search Computational Mechanics and Pattern Prediction	Keck Program in Evolutionary Dynamics Epidemiology of Influenza and Malaria Biodiversity Loss in Complex Communities Genotype/Phenotype Maps Evolution of Physiological Adaptations Dynamics of Insect Societies Genetic Plasticity and Generation of Diversity Models of Extinction Optimization of Evolutionary Computation RNA Structures Self-Maintaining Organisms/Abstract Chemistry Evolution of Organismal Development Multilevel Selection Theory Co-evolution of Institutions and Preferences Biological Recovery and Innovation Directed Evolution Evolution of Language Network Formation and Evolution Market Force, Ecology and Evolution Evolutionary Search	Biological Recovery and Innovation Organizational Emergence Directed Evolution Dynamics of Innovation (BN)	Adaptive Computation The Immune System and Other Biological Models Evolution of Language	Scaling and Distribution Networks Network Structure/Small-world Networks Biochemical Networks Network Formation and Evolution Complex Interactive Networks The Internet as a Complex System Synchronization Behavior in Network Environments Molecular Signalling Networks Biodiversity and Ecological Complexity	The Immune System and Other Biological Models Swarm Artificial Life Complexity and Agent-based Modeling (BN)
2001-2002 (2001 AR) (Web)	Robustness Robustness and Evolvability of Protein Systems Genetics of Phenotypic Robustness Switching Functional Tasks Biological Recovery and Innovation Robustness of Cytokine Signalling Networks Mutational Robustness Robustness of Genetic Networks Innovation in Evolution Innovation in RNA Self-protecting Genetic Circuits Immunity and Pathogenesis Cognitive Neuroscience (SFIC) Genetic Regulatory Networks Robustness in Genetic Networks Feedback/Control in Artificial/Natural Immune Systems Artificial Life	Cognitive Neuroscience (SFIC) Pleistocene Hunters on Tibetan Plateau Evolution of Language Dynamics of Cultural Change: Unified Framework State and Market Formation Market Force, Ecology and Evolution Learning, Market Impact and Ecologies Emerence of Diversity in Finance Heterarchies Human Social Behavior Origins of Human Sociality Co-evolution of Institutions and Preferences Persistent Inequality Political Violence, Civil War, Negotiated Settlements Swarm Socio-Natural Co-Evolution (I)	Computation in Physical and Biological Systems Evolving Cellular Automata Mathematical Models in Molecular and Cellular Biology Measures of Complexity Thermoacoustic Engines Intrinsic Computation Computational Complexity in Physical Processes Neuronal Habituation/Adaptive Speech Recognition Statistical Characterization of Networks Feedback/Control in Natural/Artificial Immune Systems Adaptive Defense Computing (BN) Non-extensive Statistical Mechanics (I)	Robustness Robustness and Evolvability of Protein Systems (WS) Genetics of Phenotypic Robustness Collective Cognition Switching Functional Tasks Biological Recovery and Innovation Robustness of Cytokine Signalling Networks Mutational Robustness Robustness of Genetic Networks Organizational Robustness Innovation in Evolution Innovation in RNA Evolutionary Innovation in Deep Time Immunity and Pathogenesis Self-protecting Genetic Circuits Innovation in Evolution Workshop (I) Dynamics of Cultural Change: Unified Framework Market Force, Ecology and Evolution Co-evolution of Institutions and Preferences Pleistocene Hunters on Tibetan Plateau Socio-Natural Co-Evolution (I)	Innovation in Evolution Innovation in RNA Evolutionary Innovation in Deep Time Immunity and Pathogenesis Self-protecting Genetic Circuits Innovation in Evolution Workshop (I) Emerence of Diversity in Finance	Adaptive Computation Cognitive Neuroscience (SFIC) Neuronal Habituation/Adaptive Speech Recognition	Statistical Characterization of Networks Genetic Regulatory Networks Robustness in Genetic Networks Network Dynamics (BN) Value Networks: Supply Chain Optimization (BN) Dynamics of Networks & Spatially Extended Systems (I)	Mathematical Models in Molecular and Cellular Biology Swarm Artificial Life Agent-based Modeling (BN)
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