Project ID: 691178
Funded under: H2020-EU.1.3.3. - Stimulating innovation by means of cross-fertilisation of knowledge

Synthesis and Performance Optimization of a Switching Nano-crossbar Computer

From 2015-12-01 to 2019-11-30, ongoing project | NANOxCOMP Website

Project details

| Total cost: | Topic(s): |
| EUR 724 500 | MSCA-RISE-2015 - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) |

| EU contribution: | Call for proposal: |
| EUR 643 500 | H2020-MSCA-RISE-2015 | See other projects for this call |

| Coordinated in: | Funding scheme: |
| Turkey | MSCA-RISE - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) |

Objective

The main goal of this project is developing a complete synthesis and optimization methodology for switching nano-crossbar arrays that leads to the design and construction of an emerging nanocomputer. New computing models for diode, FET, and four-terminal switch based nanoarrays are developed. The proposed methodology implements both arithmetic and memory elements, necessitated by achieving a computer, by considering performance parameters such as area, delay, power dissipation, and reliability. With combination of arithmetic and memory elements a synchronous state machine (SSM), representation of a computer, is realized. The proposed methodology targets variety of emerging technologies including nanowire/nanotube crossbar arrays, magnetic switch-based structures, and crossbar memories. The results of this project will be a foundation of nano-crossbar based circuit design techniques and greatly contribute to the construction of emerging computers beyond CMOS.

The topic of this project can be considered under the research area of “Emerging Computing Models” or “Computational Nanoelectronics”, more specifically the design, modeling, and simulation of new nanoscale switches beyond CMOS. The topic is well addressed and fit in H2020 work programmes FET (Future and Emerging Technologies) and ICT-25 (Generic Micro- and Nano-electronic Technologies).

Related information

Report Summaries

Periodic Reporting for period 1 - NANOxCOMP (Synthesis and Performance Optimization of a Switching Nano-crossbar Computer)
Coordinator

ISTANBUL TEKNIK UNIVERSITESI
AYAZAGA KAMPUSU
34469 MASLAK ISTANBUL
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EU contribution: EUR 270 000

Activity type: Higher or Secondary Education Establishments
Contact the organisation

Participants

IVERSITA DEGLI STUDI DI MILANO
Via Festa Del Perdono 7
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EU contribution: EUR 99 000

Activity type: Higher or Secondary Education Establishments
Contact the organisation

IROC TECHNOLOGIES SA
Place Robert Schuman 5
38000 GRENOBLE
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EU contribution: EUR 0

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)
Contact the organisation

KARLSRUHER INSTITUT FUER TECHNOLOGIE
KAISERSTRASSE 12
76131 KARLSRUHE
Germany

EU contribution: EUR 166 500

Activity type: Higher or Secondary Education Establishments
Contact the organisation

INSTITUT POLYTECHNIQUE DE GRENOBLE
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EU contribution: EUR 108 000

Activity type: Higher or Secondary Education Establishments
Contact the organisation
Partner organisations

UNIVERSITY OF VIRGINIA
NORTH EMMET STREET 1001 OFFICE OF SPONSORED PROGRAMS
22904 4195 CHARLOTTESVILLE
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See on map

Activity type: Higher or Secondary Education Establishments
Contact the organisation

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Last updated on 2017-04-25
Retrieved on 2018-11-20

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