A short-term course on

Polynomials with Polynomiography and Applications

under the aegis of MHRD—Global Initiative of Academic Networks (GIAN)

Overview

The course aims to introduce a wide range of concepts related to polynomials and their modern applications in mathematics, computer science, algorithms, algorithmic art and design, going far beyond the ordinary usage and utility of these mathematical abstractions. Polynomials will be rediscovered as interesting and flexible mathematical objects that are actually very tangible and beautiful. In particular, the audience will see polynomials as tools of art and design. They will be introduced to *polynomiography* which stands for algorithmic visualization of solving polynomial equations. While it emerged from polynomial root finding algorithms, polynomiography makes it possible to introduce many complex topics and widens the scope of understanding, appreciation, and applications of polynomials far beyond root finding. It helps seeing the beauty of polynomials in different ways, also in connecting them to many different topics such as complex dynamics, fractals, Voronoi diagrams, computational geometry and much more.

It is hoped that with exposure to polynomiography not only students but educators and mathematicians will see polynomials in a different light, encouraging the teaching of novel concepts regarding polynomials, at middle and high school education, as well as in advanced courses.

Course Objective	- Exposing participants to the fundamentals of polynomials with focus on polynomial root finding algorithm - Providing exposure to connections and applications of polynomials and polynomial root finding in mathematics, computational geometry, Computer Science, education, algorithmic art and design
Important dates	- Last date for registration 30 October 2017 - Course duration : 21- 30 December 2017
Who can attend?	- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories - Student at all levels (B Tech/MSc/M Tech/PhD) - Faculty from reputed academic institutions and technical institutions - Middle and High School Math and Science Teachers - Artists and those interested in algorithmic mathematical art
Registration Fees	The participation fees is as follows: - Participants from abroad: US $500 - Industry/ Research Organizations: Rs. 10000/- per participant - Faculty : Rs. 5000/- per participant - M.Tech. and Ph.D. students: Rs. 1000/- per participant - UG students and school teachers: Rs. 500/- per participant The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges and free internet facility. The participants will be provided with accommodation on payment, first come-first serve basis.

The Faculty

Prof. Bahman Kalantari is a Professor of Computer Science, Rutgers University, United States of America. He was the Associate Chair in the department during July 2009 - June 2012. His research interest include Mathematical Programming, Linear Programming, Matrix Scaling, Discrete and Combinatorial Optimization, Polynomial Root-Finding and Related Problems, Polynomiography and Applications in Education, Art and Science, Computational Geometry, Triangle Algorithm and Applications, Education.

Prof. Kalantari has pioneered polynomiography and has been intsrumental in its popularization, delivering presentations worldwide. He holds an U.S. Patent for Polynomiography, May 17, 2005. Besides the book *Polynomial Root-Finding and Polynomiography* (published by World Scientific, 2008), he will author a book in *Linear Programming*. His article, "The Fundamental Theorem of Algebra for Artists," was selected for publication in "The Best Writing on Mathematics, 2014," edited by Mircea Pitici, Princeton University Press.

https://www.cs.rutgers.edu/~kalantar/

Dr. Tarakanta Nayak is an Assistant Professor of Mathematics in the School of Basic Sciences at Indian Institute of Technology Bhubaneswar, India. Dr. Nayak's core research interest is Complex Dynamics. In particular, he works on the iteration of transcendental meromorphic functions. His academic interest includes independent fractals of graphs, fractal image compression and polynomials.

http://www.iitbbs.ac.in/profile.php/tnayak/

Venue

School of Basic Sciences
IIT Bhubaneswar, Argul Campus
Jatni, Khurda, Odisha, India -752050

Maximum number of participants: 40

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Course Co-ordinator

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Visit GIAN registration portal:
http://www.gian.iitkgp.ac.in/GREGN/index

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Online Payment of Course Fee
Bank Details

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