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**University of Lethbridge**  
***MATHEMATICS & COMPUTER SCIENCE***

***Computer Science Visiting Professor Talk***

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**Speaker:**       **Dr. Subir Ghosh**  
                          **Tata Institute of Fundamental Research**  
                          **India**

**Title:**           **Visibility-based Robot Path Planning**

**Date:**           **Monday June 30/2003**

**Time:**          **11:30 - 12:30 p.m.**

**Room:**         **C620**

**Abstract**

In this talk, we first discuss how to reduce the problems of robot path planning to the problems of computing paths inside polygons with or without holes. Then we discuss how to compute the geometric shortest path and minimum link path inside a polygon using visibility structure of the polygon. In this context, we also discuss curvature-constrained shortest path problem. Finally, we discuss the problems of exploring an unknown polygon using both continuous and discrete visibility, and present a few approximation on-line algorithms. We summarize the discussion by suggesting a few open problems.

**Biography**

Dr. Subir Ghosh has been working in Computational Geometry and Geometric Graph Theory for the last two decades. His sequential, parallel, on-line and approximation algorithms for visibility, motion planning and related optimization problems are considered significant contributions to the development of computational geometry. He obtained his Ph. D. from Tata Institute of Fundamental Research, India where he is now a professor in the School of Computer Science. He is a fellow of Indian Academy of Sciences. For more details have a look at <http://www.tcs.tifr.res.in/~ghosh/>