Postdoctoral Research Position
Strategic Mine Planning

Applications are invited for a one-year postdoctoral research position in Mine Planning as part of Research Project "**Large scale optimization and uncertainty: Challenges in strategic mine planning, an interdisciplinary approach**". This is a three-year research endeavor that brings together applied mathematical scientists and engineers, with backgrounds in Operations Research, Geostatistics and Financial Economics, in a multi-disciplinary effort to advance the state of the art in Strategic Mine Planning through research, training and outreach. The project is based in Santiago, Chile, and is jointly administered by Universidad Adolfo Ibáñez, Universidad de Chile, Pontificia Universidad Católica de Chile, and Universidad Católica del Norte. The successful candidates will be working with project team members advancing the research goals of the project.

Project Background:

Strategic mine planning is a complex optimization problem made daunting both by geological and financial uncertainty (distribution of mineral resources over space and commodity prices and costs over time) and the scale of practical problems (amount of data and number of decisions involved). The tasks of creating a production schedule and modeling the inherent uncertainty are extremely challenging on their own. When addressed simultaneously, the difficulty is greatly compounded: decisions are affected by the outcomes of uncertainty, and conversely, the manner in which uncertainty is revealed depends on how decisions are made over time.

The research goal of the project is to create knowledge in Strategic Mine Planning by developing fundamental algorithms that quickly generate near-optimal production-scheduling solutions for real-sized problems, explicitly hedging against market and geological risks. To achieve this, the project seeks to develop new probabilistic models and methodologies for representing geological and financial uncertainty, new integer and dynamic programming algorithms for solving deterministic large-scale production-scheduling problems and new stochastic optimization methodologies for integrating geological and financial uncertainty into mine planning optimization problems. That is, the project seeks to combine techniques from Operations Research, Geostatistics and Financial Economics to develop an integrated approach to Strategic Mine Planning. This work will be validated on real mine planning problems obtained from a network of industry partners located both in Chile and abroad.

Benefits

Funding is available to support one Post-Doctoral position. Post-Doctoral researcher participating in the Project will receive a salary of CLP $1.800.000 per month, up to 10 months (approximately USD $27,000, depending on rate). Salary does not include health benefits which must be paid for separately.

Application Process:

Interested candidates must have a Ph.D. in mathematics, computer science, geoscience or engineering at the time of initiating participation in the project, and must present an application package consisting of:

1. A letter of intent, outlining the reason they are interested in participating in the project. This letter should indicate whom the candidate would like to work with, or (briefly) suggest topics of interest within the scope of the research objectives.
2. An updated Curriculum Vitae, including a list of publications.
3. A list of Ph.D. level courses taken or the most recent transcript.
4. The names of two references.

Application packages must be sent to proyectoanillo@uai.cl before July 30th, 2017. The selection process will consist of two steps. First, a subset of the candidates will be preselected based on the strength of their CV and their fit with the project. Second, these candidates will be interviewed and their references will be contacted. Acceptance will be determined by the principal researchers of the project, taking into account the application package, the interview, and the reference letters. Candidates will be notified of acceptance during the month of August, 2017. Accepted candidates may begin working in the project as soon as August 2017, and as late as October, 2017. Knowledge of Spanish is not required.

For more information, write to the project director, Marcos Goycoolea, or, write to any of the project researchers.

Project Team:

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