



**Proposal of thesis topic for mgr inż. (MSE) programme  
in Telecommunications and Computer Science**

**1. Topic:** Monte Carlo Method used for a prognosis of a selected technological process

**2. Supervisor:** Dr. inż. Małgorzata Langer

**3. Auxiliary supervisor:**

**4. Goals and scope of the work:**

The goal of the Monte Carlo method is to simulate an existing model (which can be a selected technological process) by randomly sampling from the input parameter distributions and then performing the necessary calculations (experiments) to predict (measure) the output response. The vital problem is to calculate the confidence level in the Monte Carlo simulation and to determine the number of trials required to meet a given confidence.

**5. Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):**

The student should be fond of probability, theory of experiments, and have some experience in Excel

Łódź, dn. 2005-04-20

Podpis opiekuna

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**DEKLARACJA WYBORU TEMATU**

Imię i nazwisko: \_\_\_\_\_ Nr albumu: \_\_\_\_\_

Wydział: \_\_\_\_\_ Rodzaj studiów: **DM**  **DI**  **WI**  **ZI**

Kierunek/specjalność/moduł: \_\_\_\_\_

Data i podpis studenta

Podpis opiekuna



**Proposal of thesis topic for mgr inż. (MSE) programme  
in Telecommunications and Computer Science**

**1. Topic: Lattice Boltzmann Method in Electronics**

**2. Supervisor: Dr. inż. Małgorzata Langer**

**3. Auxiliary supervisor:**

**4. Goals and scope of the work:**

In the last decade lattice Boltzmann schemes have been successfully applied to the analysis of a variety of complex physical phenomena. The fields of application in electronics cover thermal management, flows, crystal growth, solidification, etc.

The goal of the work is to perform the critical analysis, and the review of “the state of art” of applying LBM in electronics.

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**5. Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):**

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Łódź, dn. 2005-04-20

Podpis opiekuna

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Wydział: \_\_\_\_\_ Rodzaj studiów: **DM**  **DI**  **WI**  **ZI**

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**Proposal of thesis topic for mgr inż. (MSE) programme  
in Telecommunications and Computer Science**

**1. Topic: Cellular Automata in Electronics**

**2. Supervisor: Dr. inż. Małgorzata Langer**

**3. Auxiliary supervisor:**

**4. Goals and scope of the work:**

Cellular automata and Lattice-gas automata (a special type of cellular automata) – are relatively new (less than 20 years old) numerical schemes to solve physical problems ruled by partial differential equations. Though are sufficient simple to allow detailed mathematical analysis, yet sufficient complex to exhibit a wide variety of complicated phenomena. The goal of the work is to perform the critical analysis, and the review of “the state of art” of applying CA in electronics.

**5. Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):**

Łódź, dn. 2005-04-20

Podpis opiekuna

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Wydział: \_\_\_\_\_ Rodzaj studiów: **DM**  **DI**  **WI**  **ZI**

Kierunek/specjalność/moduł: \_\_\_\_\_

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**Proposal of thesis topic for mgr inż. (MSE) programme  
in Telecommunications and Computer Science**

**1. Topic: DFSS (Design for Six Sigma) for IPM Module**

**2. Supervisor: Dr. inż. Małgorzata Langer**

**3. Auxiliary supervisor:**

**4. Goals and scope of the work:**

In Design for Six Sigma, a probabilistic analysis is performed instead to analyze how variations or uncertainties in the input parameters affect the performance of a system. A single deterministic analysis cannot give this information. The block diagram of The Intelligent Power Module will be the subject of analyzing.

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**5. Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):**

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Łódź, dn. 2005-04-20

Podpis opiekuna

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Wydział: \_\_\_\_\_ Rodzaj studiów: **DM**  **DI**  **WI**  **ZI**

Kierunek/specjalność/moduł: \_\_\_\_\_

Data i podpis studenta

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**Proposal of thesis topic for mgr inż. (MSE) programme  
in Telecommunications and Computer Science**

**1. Topic: Reliability Tests for Thermal Management Issues with Monte Carlo Method**

**2. Supervisor: Dr. inż. Małgorzata Langer**

**3. Auxiliary supervisor:**

**4. Goals and scope of the work:**

The Monte Carlo method is a simple but powerful tool for thermal engineering. It allows to see the effect of variations in controlled and uncontrolled design parameters on critical design requirements. The main disadvantage is that the accuracy is a function of the number of trials. And here the principles of Theory of Experiment should be discussed and met to reduce this number significantly. The scope of the work is to design and to perform a virtual experiment related to the thermal management in a given electronic model.

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**5. Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):**

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Łódź, dn. 2005-04-20

Podpis opiekuna

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Wydział: \_\_\_\_\_ Rodzaj studiów: **DM**  **DI**  **WI**  **ZI**

Kierunek/specjalność/moduł: \_\_\_\_\_

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