

# Report on Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

<b>Student:</b>	<b>Bc. Jan Hubík, MBA</b>
<b>Advisor:</b>	<b>RNDr. Michal Červinka, Ph.D.</b>
<b>Title of the thesis:</b>	<b>Player Skill Rating for Games with Random Matchmaking</b>

## **OVERALL ASSESSMENT** *(provided in English, Czech, or Slovak):*

The thesis focuses on a skill rating system which reflects current modern games, including massive online gaming etc. Starting with a binary and also with non-binary performance measures, the author develops a new general skill rating framework, the broad applications of which are also discussed in the thesis. The main workhorse is advanced Bayesian statistics. The achieved rating system is confronted with some which are currently used and which often contain possibility for ad-hoc recalibration. The computed rating of each individual player is a percentile rank and its interpretation is straightforward.

The thesis is written in nearly flawless English. The occasional typos, however, do not affect readability of the logically structured text and one can follow the author's explanation of the theory used with no hurdles. In particular, I enjoyed the first two chapters which overview the existing rating systems, their flaws along with potential for improvement, provide links to the existing literature on the topic; and also build up the theory for an improved skill rating framework under various settings of the game. I admire the author for developing new nontrivial formulas by applying rather advanced Bayesian techniques which definitely goes beyond the average knowledge of master student at IES FSV UK.

To conclude, this unique thesis contains numerous novel results by the author, starting from deriving the formulas based on application of theory of Bayesian statistics, to numerical simulations and application to a real game data. The author himself was setting goals of this thesis and he worked mostly independently. I am confident that the achieved results will be of interest of online gaming community and possibly to other communities of areas of possible applications described in Section 5. With a little extra effort of the author, the manuscript can become a cornerstone of a doctoral dissertation.

## **SUMMARY OF POINTS AWARDED** *(for details, see below):*

<b>CATEGORY</b>	<b>POINTS</b>
<i>Literature (max. 20 points)</i>	19
<i>Methods (max. 30 points)</i>	30
<i>Contribution (max. 30 points)</i>	30
<i>Manuscript Form (max. 20 points)</i>	19
<b>TOTAL POINTS (max. 100 points)</b>	<b>98</b>
<b>GRADE (1 – 2 – 3 – 4)</b>	<b>1</b>

**NAME OF THE REFEREE:** *Michal Červinka*

**DATE OF EVALUATION:** *2.9.2016*

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**Referee Signature**

### **EXPLANATION OF CATEGORIES AND SCALE:**

**LITERATURE REVIEW:** *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong                  Average                  Weak  
20                          10                          0

**METHODS:** *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

Strong                  Average                  Weak  
30                          15                          0

**CONTRIBUTION:** *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

Strong                  Average                  Weak  
30                          15                          0

**MANUSCRIPT FORM:** *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Strong                  Average                  Weak  
20                          10                          0

### **Overall grading:**

TOTAL POINTS	GRADE		
81 – 100	<b>1</b>	= excellent	= výborně
61 – 80	<b>2</b>	= good	= velmi dobře
41 – 60	<b>3</b>	= satisfactory	= dobře
0 – 40	<b>4</b>	= fail	= nedoporučuji k obhajobě