Dr. Robert T. **Fekete**

RESEARCH AND DEVELOPMENT ENGINEER, C# AND PYTHON SOFTWARE DEVELOPER

Solution-oriented software developer, in multidisciplinary engineering for 15 years, with responsible R&D management experience. Besides technical PhD also having psychology degree, adaptive researcher-engineer in human-centered design and medical engineering devices. Committed about development of assistive technologies and education of applied informatics. Recent scopes are engineering and medical applications of deep learning.

Budapest, Hungary dr.robert.t.fekete@gmail.com +36 30 417 8030

linkedin.com/in/feketeroberttamas dr-robert-t-fekete.github.io

WORK EXPERIENCE

Senior R&D and Software Engineer *at Medicontur Medical Engineering Ltd.*

2018.04 – Present (Budapest, Hungary)

Achievements and Responsibilities:

- Developed and implemented new **remote diagnostic** method and **software** (`tools: Python, JavaScript`) in color vision deficiency measurement that improved diagnostic accuracy from about 60% to nearly 100%.
- Developed and implemented new **evaluation software** (`tools: Python, C#`) that quickened tolerance assessment procedure as a part of the TQM system.
- Research and developed original **state of the art models** and **procedures** (`tools: Excel VB, Python`) in color vision correction that reduced filter design time in half.
- Designed new **color vision correction filters** that significantly enhanced color identification and discrimination in the same time (`tools: Excel VB, Python`).
- Designed, organized and evaluated extensive **patient experiment series**, that verified effects of new color correction filters (`tools: color vision measurement instruments`).
- **Leading** diagnostic **subunit** and **software development** workflows (inhouse and outsourced) (`tools: Python, C#, C++, JavaScript`).

Senior Lecturer *at Budapest University of Technology and Economics,*

Faculty of Mechanical Engineering, Department of Mechatronics, Optics and Mechanical Engineering Informatics

2017.12 – Present (Budapest, Hungary)

Achievements and Responsibilities:

- Given every **Applied Informatics lecture** for mechanical engineers, energetic engineers and industrial product development engineers at the Faculty of Mechanical Engineering (`tools: C#, Python, HTML, CSS, JavaScript`).
- Given **lectures** in the field of **Intelligent Machines** and **Visualization Technics**.
- Participating in departmental **research programmes** and **industrial projects** in the field of **applied informatics and machine learning** (`tools: Python, C#`).
- Representing Department in the Unified Psychological Research Ethics Committee of Hungary, and **preparing ethical reviews**.

Senior Research and Development Expert *at HungaroControl*

Hungarian Air Navigation Services Co.

2017.12 – 2018.04 (Budapest, Hungary)

Achievements and Responsibilities:

- Designed **disruptive R&D concepts** in the field of **AI** and **system automatization** in connection with air traffic control, that could enhance performances and reduce mental effort of air traffic controllers.
- Planned, implemented and evaluated **HMI experiments**, recommended **optimization suggestions** for control systems and **software ergonomics re-design**, that could contribute to reduction of mistakes.
- Coordinated and supervised contractual **R&D projects** with external partners, that could increase air traffic safety.
- Managed international and national tender issues and prepared **national** and **EU** development **proposals** in connection with air traffic safety (for instance drones).
- **Coordinating** of the R&D **subunit**, resource allocation, distribution of tasks.

TECHNICAL SKILLS

(for details see the left)

- **Software development** (**Python**, **C#**, JavaScript, C++, Java, VB, Git, Advanced Excel, MySQL, HTML, CSS, TensorFlow/Keras),
- **Multidisciplinary team leading**,
- **Human-centered product design**,
- **CAD** and Simulation systems (**SolidWorks**, **AutoCAD**, Solid Edge, LabVIEW, ANSYS),
- **Teaching, Mentoring, Coaching,**
- R&D project management,
- Psychology and Ergonomics,
- Industrial product development,
- Graphics (Photoshop, InDesign, CorelDraw, Inkscape, 3ds Max),
- Presentation

SOFT SKILLS

(for details see the left)

- Quick learning ability, Adaptability, flexibility
- Interdisciplinary approaching,
- Operative and practical workstyle,
- Positive and energetic attitude,
- Leadership, Time management, prioritization,
- Cooperation and communication

Senior Assistant Professor *at Budapest University of Technology and Economics,*

Faculty of Mechanical Engineering, Department of Mechatronics, Optics and Mechanical Engineering Informatics (2006 – 2008 as PhD student)
2009.01 – 2017.12 (Budapest, Hungary)
Achievements and Responsibilities:

- **Software development, Scientific research**, Mechanical engineering and Project management in academic and industrial R&D projects:
    - **Modelled bio-psychologically systems**, that used for prediction of living creatures' behaviour.
    - **Designed and implemented artificial and bio-inspired behaviour engines** for mobile robots in public spaces.
    - Developed and implemented **virtual** social-robotics software **agent** for self-driving cars, that could reduce anxiety of passive driver.
    - **Built and programmed** autonomous explorer **mobile robot** for social robotics experiments.
    - Online and **remote control of mobile robots** for e-laboratory system, that used for virtual collaboration.
    - Implemented **3D space reconstruction system** for autonomous robot navigation. (`tools: LabVIEW, C#, C++, OpenCV, Java`)
    - **Developed and implemented software and procedure** to measure psychophysical responses of drivers in braking situations using proportional brake lights.
    - **Created effect analysis** of adaptive brake lights.
    - Modelled human-machine-environment systems (**ergonomics**).
    - **Designed heart rate variability measurement** procedure for simulator experiments, that used for determination actual mental effort during any activity.
    - **Designed proportional vehicular display** making the traffic safer. (`tools: VB, C#, LabVIEW`)
    - Non-invasive blood glucose estimation: **Built software and optics-based instrument** to measure light transmission of human tissue, that could lead to the glucose measurement without any needle prick. (`tools: LabVIEW, C#`)
    - Pupillometry: **Built optics-based instrument and image processing software** to measure direct and consensual light reflexes, that helps to specify the location of brain injury. (`tools: LabVIEW`)
    - Designed and implemented a precision mechanical equipment for retina observation. (`tool: SolidWorks, ANSYS`)
    - Analysis and debugging of control software for a windscreen production line. (`tools: Visual Studio, VB`)

- **Giving lectures**, **leading seminars**, taking responsibilities for subjects, evaluating students in the following fields:
    - **Software engineering**, Applied computer science. (`tools: C#, Python, C++, VB`)
    - **CAD**, VEM, 3D modelling systems. (`tools: SolidWorks, AutoCAD, ANSYS, 3ds MAX, Blender, Maya, Cinema4D`)
    - **Intelligent machines**, Artificial intelligence, Sensors and actuators.
    - **Measurement technology and statistics** – In English.
    - Visualization and Presentation technics. (`tools: Inkscape, CorelDRAW, Python, C++, VB`)
    - Biomechatronical engineering modelling and simulation. (`tools: Scilab, Matlab`)
    - Lighting and colour technology (optics and human vision).

Software Developer, CEO *at Innoco Ltd.*

2015.1 – 2018.6 (Budapest, Hungary)
Achievements and Responsibilities:
- Developed and implemented Internet based remote **control system of a mobile robot** for educational purposes (with created **educational materials**) for The Arctic University of Norway (`tools: C++, OpenCV`).
- Developed and implemented **software of** a **psychophysical** (testing different modalities) **measurement** station (`tool: C#`).
- Conducted **trainings** in the topic of **engineering leadership** and **coaching** methods.
- Partners (5-10 colleagues) **coordination**, **resource allocation**.

PROFESSIONAL TRIPS

- **Chuo University**
  Visiting professor
  Tokyo, Japan
  2016 and 2017
  Coordination of ethorobotics researches and discussions with international partner scientists
- **UiT The Arctic University of Norway**
  Visiting professor
  Narvik, Norway
  2016
  Coordination of mobile robotics researches, attending in the industrial engineering programme of the University
- **Technische Universität Ilmenau**
  University courses
  Ilmenau, Germany
  2007
- **Silesian University of Technology**
  University courses
  Gliwice, Poland
  2006 and 2007

PROFESSIONAL MEMBERSHIPS

- **Unified Psychological Research Ethics Committee of Hungary**
  2015 – Present
- **International Commission on Illumination CIE**, Division of Image Technology
  2014 – Present
- **Robotics & Ethorobotics Research Laboratory**, Department of Mechatronics, Optics and Mechanical Engineering Informatics
  2013 – 2017

Product Development and Software Engineer *at Cytotech medical engineering Ltd.*
2006.1 – 2006.9 (Budapest, Hungary)

Achievements and Responsibilities:
- Redesigned **user interface (HMI and UX design)** of a medical robot for blood serology laboratories that improved usability and accuracy using (`tool: C++`).
- Redesigned and documented feature-based, 3D **CAD models and technical drawings of medical instruments** that was the first non-outsourced application of CAD system at the company (`tools: SolidEdge, SolidWorks, AutoCAD`).
- Negotiations with suppliers, implementing orders.

EDUCATION

PhD degree in Mechanical Engineering Sciences
Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Department of Mechatronics, Optics and Mechanical Engineering Informatics
2006 – 2009 (Budapest, Hungary)

Filed of thesis: Human-machine-environment **system and effect analysis** of adaptive acceleration and deceleration displays for **automotive industry** (applied disciplines: **informatics (**`tools: VB, LabView, C#`**), ergonomics**, psychology, optics, mathematical statistic)

M.Sc. degree in Industrial Design Engineering
Budapest University of Technology and Economics, Faculty of Mechanical Engineering
2000 – 2005 (Budapest, Hungary)

Field of thesis: Design and implementation of **user interface** for a **medical device** (blood-type tester robot) (applied disciplines: **informatics (**`tool: C++`**), ergonomics**).

B.A. degree in Behavioural Analyst Psychologist
Károli Gáspár University of the Reformed Church in Hungary
2011 – 2014 (Budapest, Hungary)

Field of thesis: Optimal **leadership** style of R&D **engineering groups** for the best performance.

TOP SELF INITIATIVE PROJECTS

Insulin Tracker *(Android and Windows Phone apps for diabetic people)*
These apps help **diabetic people** to **find out** actual and predicted **insulin effect in their blood** (smart blood glucose management system), thus they need **less mental effort** to maintain the delicate glucose-insulin balance. With this assistance people with diabetes can **avoid life-threatening hyper- and hypoglycemia** and their life quality could be much better. The alpha testing in progress. (`tools: `**`C#`**`, Xamarin, Java, Android Studio`).

ProgramozasKarrier.hu *(Bootcamp-like software developer courses and mentoring)*
On this site we (with my partners) offer **programming courses, mentoring and coaching services** and **create** text-based (**articles and books**) and multimedia-based (**YouTube videos**) educational materials for people who want to start their **new career as a software developer** (`tools: `**`Python`**`, JavaScript, HTML, CSS, `**`C#`**`).

MOTIVATIONS
- Varied, challenging and value creating work that requires creativity,
- Team leading role, taking responsibilities,
- Opportunity for learning and self-development,
- International environment, traveling

INTERESTS
- Computer science, Programming,
- Artificial intelligence, Deep learning,
- Teaching, Mentoring,
- Natural sciences, Future science, Green technologies, Autonomous vehicles,
- Psychology, Sociology
- Sport, Gastronomy,
- Travelling, Films

(2019.12.06, Budapest)