
Name: **Mohammadbagher Lak**
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Education

- **PhD in Biosystems Engineering (Sep. 2013- Mar. 2018)**

Biosystems Engineering Department
Tarbiat Modares University, Tehran, Iran

Dissertation title: **A Smart Irrigation Control System Based on Machine Vision and Crop Growth Model for Greenhouse Tomatoes**

Supervisor: Professor **S. Minaei**

Advisors:

Dr. **S. Soufizadeh**, Ecological Agriculture Department, Shahid Beheshti University, Tehran, Iran

Dr. **A. Banakar**, Biosystems Engineering Department, Tarbiat Modares University, Tehran, Iran

- **Guest Researcher (Jan.-Jul., 2017)**

Horticulture and Product Physiology Group
Wageningen University and Research, Netherlands

Project Title: **Modeling Lettuce Nutrient Uptake as a Part of TIME SCLAE Project**

Supervisors:

Professor **L. Marcelis** and Dr. **S. van Delden**

- **M.Sc. in Agricultural Mechanization (2008-2010)**

Department of Agricultural Machinery and Mechanization
Science and Research Branch of Islamic Azad University, Tehran, Iran

Thesis title: **Evaluation of Appropriate Conditions of Image Segmentation for Tree Fruit Recognition for Mechanized Harvesting of Apple**

Supervisor: Professor **S. Minaei**

Advisors:

Dr. **J. Airiparian**, Biosystems Engineering Department, Bu-Ali Sina University, Hamedan, Iran

Dr. **B. Beheshti**, Biosystems Engineering Department, Science and Research Branch of Islamic Azad University, Tehran, Iran.

- **M.Sc. in Mechanics of Agricultural Machinery (2012-2013)**

I passed technical courses in the field of mechanics of agricultural machinery. I took the courses as my second M.Sc. at Department of Agrotechnology, College of Aburaihan, University of Tehran, Iran (2012-2013). However, I abandoned the position as I was admitted as PhD student at Tarbiat Modares University in 2013.

- **B.S. in Agricultural Mechanization (2004-2008)**

Department of Agricultural Machinery, Bu-Ali Sina University, Hamedan, Iran.

Current Occupation

Editor in chief of AgroTechnology electronic journal I am which began to work in 2017; however, unofficially the journal activities had been started in 2007 in my own weblog (www.agrimechanization.blogfa.com) and continued in my website (www.agrimechanization.com) in 2013. Furthermore, as chair of Zist Samaneh Pardis Ltd., that in collaboration with a friend established in Jan. 2015, I am also involved in practical jobs. Zist Samaneh is the Farsi translation of Biosystems. In the company, our focus has placed on technical aspects both in the field of horticultural and greenhouse affairs, and farm machinery design, test, and evaluation based on national and international standards. Both the field of activities are authorized and under supervision of Iran Ministry of Agriculture.

Moreover, growing greenhouse crops has been my other occupation since last year after PhD. There, we are growing tomatoes, peppers and cucumbers and also working on solving the problems that the crops are involved. Malnutrition, pests, and diseases are the main problems that the growers are faced to. Working on complete and cheap fertigation mixture as well as machine-vision-based spraying systems are subjects that I am working on.

In my family garden, I am working on growing of new varieties of plants that have not been grown there, in Hamedan, yet. Grafting better cultivars and also finding good domestic cultivars are my hobbies in the family garden. Furthermore, development of new ideas such as making mini farm consists of plants, bees, fish, and likely, in the future, small biogas plant are undergo in [#laks_garden](#). In addition, spatio-temporal management of water and nutrition in the garden are of my interests.

Research Interests

- Agricultural/Greenhouse Systems Analysis
 - Precision Agriculture
 - Application of Machine Vision in Agriculture
 - Agricultural Machinery and Mechanization
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References

Mr. M. **Korehi**, Deputy Minister and Chair of Geological Survey of Iran (Retired), mt.korehie7@gmail.com
Prof. S. **Minaei**, Tarbiat Modares University, Tehran, Iran: minaee@modares.ac.ir
Prof. L. **Marcelis**, Wageningen University and Research, leo.marcelis@wur.nl
Prof. M. **Almassi**, I.A.U., Sci. & Res. Branch, Tehran, Iran: morteza.almassi@gmail.com
Dr. M. **Aboonajmi**, University of Tehran, Tehran, Iran (Associate Prof.): abonajmi@ut.ac.ir
Dr. B. **Beheshti**, I.A.U., Sci. & Res. Branch (Associate Prof.), Tehran, Iran: bakhoda@srbiau.ac.ir
Dr. S. **Soufizadeh**, Shahid Beheshti University (Assistant Prof.), Tehran, Iran: ah_banakar@modares.ac.ir
Dr. A. **Banakar**, Tarbiat Modares University (Associate Prof.), Tehran, Iran: s_soufizadeh@sbu.ac.ir
Dr. J. **Amiriparian**, Bu-Ali Sina University (Assistant Prof.), Hamedan, Iran amiriparian@basu.ac.ir

Awards and Honors

- Defending my PhD project with grade A in March 6, 2018.
 - Accepted invention by Hamedan Science and Technology Park with smart indoor greenhouses.
 - First ranked among 34 participants who invited to the scientific interview for PhD program in Mechanics of Agricultural Machinery at Tarbiat Modares University, Tehran, Iran (2013).
 - First ranked among more than 3500 student scientific works in the 1st HAREKAT (National Student Scientific Societies) Festival by writing a book (Modern Agriculture) in Persian (2008).
 - First ranked among 15 graduate students during my M.Sc. (2010).
 - Third ranked among more than 150 participants in the M.Sc. Entrance Examination of Agricultural Mechanization in Science and Research Branch, Islamic Azad University, Tehran, Iran (2008).
 - I awarded as the sufficient member of the most active student scientific society, Faculty of Agriculture, Bu-Ali Sina University (2008).
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Executive Experience

- Chief Editor of "Agrotechnology" electronic journal that is published at www.agrimechanization.com.
 - Investigation on agricultural mechanization for a 130,000 ha farm in Kazakhstan (2016-2017).
 - Chair of Zist Samaneh Prdis Ltd. (Currently). Zist Samaneh is the Farsi translation of Biosystems. The Company is authorized by Iran Agricultural Engineering Regulation Organization to work on horticultural affairs contract.
 - I have been qualified as agricultural engineer Grade One by Iran Agricultural Engineering Regulation Organization (since 2012).
 - Responsible of safety matters in HSE bureau of Geological Survey of Iran, Ministry of Industry, Mine and Trade.
 - Establishment of "Department of Agricultural Geology" in Geological Survey of Iran and contribution in the governmental plan to develop geosciences' data/information application in agriculture (2013).
 - Responsible of agrogeological studies of Iran, Geological Survey of Iran (2013 to 2016).
 - Contribution in preparation of Iran road maps for geosciences, Geological Survey of Iran (2014-2015).
 - Executive secretary of 33rd National Geosciences Symposium, Geological Survey of Iran (2015).
 - Preparation of the maps of sampling grids for agrogeological surveys of Iran provinces in 1:100000 and 1:25000 (2015).
 - Agricultural machinery test expert (Since 2007).
 - Administrator of agri. mechanization specialized website: www.agrimechanization.com
 - Contributing in the "32nd National and the 1st International Geosciences Congress" as scientific committee member. I also worked there as executive member.
 - Working with Hamedan Organization of Agricultural Extension (2011-2012).
 - Contributing in a research project on "Determination of Optimum Agricultural Mechanization Level for Hamedan Province, Iran" between Hamedan Division of Agriculture and KANKASH Society of Agricultural Elites (2010-2011).
 - Contribution in "Potato Production Costs Analysis Before and After Energy Prices Increase" in Hamedan farms, an economical study for Iran's Farmers Organization (2010).
 - Contribution in national program of Remedies for Introduction and Extension of Precision Agriculture in Iran, Iran Ministry of Agriculture (2008-2009).
 - Management my own family garden which is about 15000 m² (2008 to now).
 - Contribution in production of greenhouse vegetables in Hamedan (Since Jun 2018)
 - Working with NGOs and private companies in the projects that are related to agricultural mechanization.
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Publications

Books:

- Lak, M.B., 2007. Modern Agriculture: Sustainable Agriculture, Precision Agriculture (in Farsi). Rouzandish Publication, Hamedan, Iran. (ISBN: 978-964-91362-5-7)
 - Asadi, M., Lak B.H. and M.B. Lak, 2016. Energy Statistics in Iran and Around the World (in Farsi). Iran Energy Efficiency Organization, Tehran, Iran.
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Reports:

- Lak, M.B. 2017. Overseas Agriculture in 130,000 ha of Kazakhstan Farmlands: Agricultural Mechanization Analysis, PeyAbNovin Co., Jahad Sabz, Jahad Esteghlal, and Iran Ministry of Agriculture.
 - Lak, M.B. 2017. Dynamic Model of Lettuce for TIME SCALE (DyMoLeTiS). Horticulture and Product Physiology Group, Wageningen University and Research, Netherlands.
 - Lak, M.B., 2016. Atlas of Iran Agrogeology (in Farsi). Geological Survey of Iran, Ministry of Industry, Mine and Trade, Iran.
 - Lak, M.B., 2016. Safety Standards in Geological Surveys (in Farsi). Geological Survey of Iran, Ministry of Industry, Mine and Trade, Iran. By now 5 parts have been released.
 - Lak, M.B., 2015. Agrogeology (in Farsi). Geological Survey of Iran, Ministry of Industry, Mine and Trade, Iran.
 - Lak, M.B., Modarres, M.H., 2015. Unconventional Waters (in Farsi). Geological Survey of Iran, Ministry of Industry, Mine and Trade, Iran.
 - Lak, M.B. and K. Oskoui, 2008. Children Health and Safety in Farm (in Farsi). Extensional pamphlet for Hamedan Division of Agriculture.
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Papers:

- Lak, M.B., Minaei, S., Soufizadeh, S. and A. Banakar, 2018. Agricultural crop growth modelling: a tool for dealing with the threat of climate change affecting food security (case study for greenhouse tomato), *Geosciences*, 10(6): 83-90.
 - Lak, M.B., Minaei, S., Soufizadeh, S. and A. Banakar, 2018. Modelling Rupture Force based on Physical Properties – a Case Study for Roma Tomato (*Solanum lycopersicum*) Fruits, *Agricultural Engineering International: CIGR Journal*, 20(3): 221-226
 - Lak, M.B., Minaei, S., Soufizadeh, S., Banakar, A. and G. Polder. Development of a smart machine-vision-based system to detect water stress in greenhouse tomato plants (Under revision).
 - Lak, M.B., 2012. Thresholding of Tart-cherry image frame under uncontrolled daylight conditions. *Journal of Agricultural Technology*, 8(4): 1413-1421.
 - Lak, M.B., 2011. Geometric properties of Kohanz apple fruits. *Agricultural Engineering International: CIGR Journal*, 13(4), Manuscript No. 1825.
 - Lak, M.B. and M. Almassi, 2011. An Analytical Review of Parameters and Indices Affecting Decision Making in Agricultural Mechanization. *Australian Journal of Agricultural Engineering*, 2(5), 140-146.
 - Lak, M.B. and A.M. Borghae, 2011. Multi-criteria decision making based in choosing an appropriate tractor: a case study for Hamedan province (in Persian). *Journal of Agricultural Machinery Engineering*, 1(1), 41-47.
 - Lak, M.B., 2011. Estimation of wheat cultivation mechanization status in Iran. *Asian Journal of Agricultural Sciences*, 3(1), 51-54.
 - Lak, M.B., Minaei S., Amiriparian J. and B. Beheshti, 2010. Apple fruits recognition under natural luminance using machine vision. *Advance Journal of Food Science and Technology*. 2(6), 325-327.
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Presentations

Oral:

- Heidari, B., Lak, M.B., Najafi, G.H. and A. Saeidi, 2017. Roadmap of water and energy for Tehran province: essentiality and remedies. The Second National Conference On Sustainable Development in Energy, Water and Environmental Engineering Systems. Iran University of Science and Technology, Tehran, Iran. February 2017.
 - Lak, M.B. and S. Minaei, 2015. Crop growth modeling: a potential method for site-specific management of greenhouses. International Symposium on New Technologies and Management for Greenhouses, Évora, Portugal, July 2015.
 - Lak, M.B., Taeibi, F. and A. Sartipi, 2015. Agrogeology: a case study for Urmia. 33rd National Geosciences Symposium, Geological Survey of Iran, Tehran, Iran.
 - Lak, M.B., Karami, Z. and S. Bani Adam. 2014. Geosciences serve the modern agriculture (agricultural geology). 32nd National and the 1st International Geosciences Congress, Rasht, Iran.
 - Lak, M.B., Nemati, S., Didari, H., Bani Adam, S. and F. Tayebi. 2014. Iran agrogeology - a case study: Malayer, Hamedan Province. 32nd National and the 1st International Geosciences Congress, Rasht, Iran.
 - Nakhaei, M., Tayebi, F. and M.B. Lak. 2014. Perlite mineral potential for the optimization use of agricultural water in Iran. 32nd National and the 1st International Geosciences Congress, Rasht, Iran.
 - Lak, M.B., Minaei S., Amiriparian J. and B. Beheshti, 2014. Development of a set of machine-vision algorithms for apple fruits recognition under daylight conditions (in Persian). The 8th National Congress on Agricultural Machinery (Biosystems) Engineering and Mechanization, Ferdowsi University, Mashhad, Iran.
 - Lak, M.B., Minaei S., Amiriparian J. and B. Beheshti, 2011. Machine Vision Recognition Algorithm Development as the First Stage of Apple Robotic Harvesting. 46th Croatian and 6th International Symposium on Agriculture, Opatija, Croatia.
 - Lak, M.B. and A.M. Borghae, 2010. Multi-criteria Decision Making Based Appropriate Tractor Selection (Case Study: Hamedan Province) (in Persian). The 6th National Conference on Agricultural Machinery Engineering and Mechanization, University of Tehran, Iran.
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Poster:

- Lak, M.B. and S. Minaei, 2016. Atlas of wheat agricultural mechanization in Iran. 10th Iranian National Congress on Agricultural Machinery (Biosystems) and Mechanization Engineering, Mashhad, Iran.
 - Lak, M.B. 2015. Important parameters involved in agrogeological studies – north-east counties of Chaharmahal-va-Bakhtiari. 33rd National Geosciences Symposium, Geological Survey of Iran, Tehran, Iran.
 - Hashemi, A.M., Khosro Anjom, F. and A.E. Hashemi, 2014. Economic justification of precision farming for wheat and barley farmlands: A case study for Hamedan province. The 8th National Congress on Agricultural Machinery (Biosystems) Engineering and Mechanization, Ferdowsi University, Mashhad, Iran.
 - Lak, M.B., Aboonajmi, M. 2013. Application of spectrometry in agricultural practices. CSBE/SCGAB 2013 Annual Conference, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.
 - Aboonajmi, M., Lak, M.B., 2013. Non-invasive quality assessment of agricultural products. CSBE/SCGAB 2013 Annual Conference, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.
 - Aghilinategh, N., Samavatean N., Yuneji S. and M.B. Lak, 2012. Determining Optimum Agricultural Mechanization Level for Province of Hamedan (in Persian). The 7th National Congress on Agricultural Machinery Engineering and Mechanization, Shiraz University, Shiraz, Iran.
 - Lak, M.B. and F. Khosro Anjom, 2010. Economics of Precision Agriculture for Wheat and Barley Cultivation in Hamedan, Western Iran. 10th International Conference on Precision Agriculture, Colorado State University, USA.
 - Lak, M.B., 2009. Wheat Cultivation Mechanization General Status in Iran. Conference on Sustainable Agriculture Engineering, Dedicated to 60th Anniversary of Research Institute for Land Reclamation and Agricultural Mechanization, Sofia, Bulgaria.
 - Lak, M.B. and M.S. Boluki, 2008. Estimation of Timeliness as an Important Parameter for Mechanized Cultivation Operations in Hamedan, Western Iran. 10th International Congress on Mechanization and Energy in Agriculture, Antalya, Turkey.
 - Lak, M.B. and M.S. Boluki, 2008. Estimation of Soil Workability as an Important Agricultural Mechanization Parameter in Hamedan Central County (in Persian). The 5th National Congress on Agricultural Machinery Engineering and Mechanization, Ferdowsi University, Mashhad, Iran.
 - Lak, M.B., 2007. Basics of Yield Monitor Installation and Operation (in Persian). The 3rd Student Conference in Agricultural Machinery Engineering, University of Shiraz, Iran.
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Reviewing Experiences

- Referee of 6 research projects for Hamedan Science and Technology Park
 - Reviewing 1 paper for Journal of Agricultural Science and Technology
 - Reviewing 2 paper for Journal of Food Measurement and Characterization
 - Reviewing 21 papers for Agricultural Engineering International: the CIGR E-journal
 - Reviewing 7 papers for 10th Iranian National Congress on Agricultural Machinery (Biosystems) and Mechanization Engineering, Mashhad, Iran.
 - Reviewing 8 papers for “32nd National and the 1st International Geosciences Congress”
 - Reviewing 4 papers for Australian Journal of Crop Science
 - Reviewing 2 papers for 46th Croatian and 6th International Symposium on Agriculture
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Participated Workshops

- HSEE (Health, Safety, Environment and Energy) sessions and workshops that have been held by Ministry of Industry, Mine and Trade of Iran (2016-2017).
 - ArcGIS software educational class held by Geological Survey of Iran, ministry of Industry, Mine and Trade, Tehran, Iran (2014).
 - HSE program involved Fire Safety, Electrical Safety, First Aids, Occupational Health training course based on OSHA and ILO Technical Manual held by QMS Italia, Tarbiat Modares University (2013).
 - Agricultural Extension Specific Workshop held by Ministry of Agriculture, Babol, Iran (2011).
 - Precision Agriculture held by Agricultural Engineering Research Institute, Karaj, Iran (2010).
 - ArcGIS software educational class held by Amirkabir University of Technology (Tehran Poly Technique), Tehran, Iran (2008-2009).
 - Precision Agriculture held by Prof. Behruzi Lar, 4th National congress on Agricultural Machinery Engineering and Mechanization, University of Tabriz, Iran (2006).
 - Other Workshops.
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Memberships

- Member of American Society of Agricultural and Biological Engineering (ASABE) (2014-2015).
 - Member of Iran Agricultural Engineering Regulation Organization (2011-present)
 - Member of Young Researchers Club of Islamic Azad University (2009-2013).
 - Dean of KANKASH Society of Agricultural Elites (2010-2011).
 - Member of Iranian Society of Agricultural Machinery Engineering and Mechanization (2006-present).
 - Member of Iran's Farmers Organization (2010-present).
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Languages

- Persian: native
 - English: fluent
 - Arabic: familiar (reading texts)
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Other Experiences

- Greenhouse implementation and equipping
 - Fruit trees grafting (cherries, apples, walnut)
 - Gardening and plant breeding
 - Beekeeping
 - Landscape design
 - Fruits dehydration
 - Irrigation system design and implementation
 - Producing herbal teas
 - Holding driving license (B and D)
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