Name: Assaf Chen **Date: 26/08/2024**

CURRICULUM VITAE

1. Personal Details

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2. Higher Education

A. Undergraduate and Graduate Studies

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1999-2003	Technion, Israel Institute of Technology, Computer Science Department	B.Sc in computer science	2003
2009-2011	Ben Gurion University of the Negev, Zuckerberg Institute for Water Research, the Albert Katz International School for Desert Studies	M.Sc in desert studies, Specializing in Hydrology. Supervised by: Prof. Noam Weisbrod	2012
2012-2017	Ben Gurion University of the Negev, Department of Solar Energy and Environmental Physics, The Bluestein Institutes for Desert Research	PhD in desert Studies, Specializing in Remote Sensing. Supervised by: Prof. Golan Bel	2018

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
10/2024 - Today	Tel-Hai College, Bio-Data department	Senior lecturer
10/2023 – 10/2024	Tel-Hai College, Bio-Data department	Associate faculty member
10/2018 - 04/2019 03/2020 - 09/2020 03/2023 - 09/2023	Tel-Hai College, Bio-Technology department	Adjunct lecturer
05/2024 - Today	MIGAL – Galilee Research Institute	Senior lecturer - PI
06/2022 – 05/2024	MIGAL – Galilee Research Institute	Lecturer – PI candidate
08/2020 – 05/2022	MIGAL – Galilee Research Institute	Principal Research Associate

10/2018 - Today	MIGAL – Galilee Research Institute	Head of the Agro-GeoInformatics research lab
09/2017-07/2020	MIGAL – Galilee Research Institute	Research Associate

4. **Offices in Academic Administration**

5. **Scholarly Positions and Activities outside the Institution**

Member in professional associations:

AGU – International Earth and Space Science Association
ISAE – Israeli Association for Agricultural Engineering
IGS – Israeli Geographical Society
IAWR – Israel Association of Water Resources
ISPA – International Society of Precision Agriculture

Serving as a reviewer in these peer-reviewed journals:

Environmental Science & Technology (EST); The International Journal of River Basin Management (JRBM); Water Resources Management (WARM); Journal of Environmental Management (JEMA); Agricultural and Forest Meteorology (J. Agric. Meteorol); Journal of the American Water Resources Association (JAWRA); Precision Agriculture (PRAG); Remote Sensing (MDPI); Environmental Monitoring and Assessment (EMAS); Sensors (MDPI).

Serving as a reviewer for the Ministry of Science (MOST) grants:

2023 - Israel-India scientific research program: AI applications in climate change
2023 – Applied research based on government bodies data: information science

Active membership in science/research networks:

2022- Today: Member in an EU COST action #CA21142 – FruitCREWS – "Fruit tree Crop REsponses to Water deficit and decision support Systems applications", https://cost-fruitcrews.eu/ . Active member in WGs-1,4 and dissemination and communication team.
2022- Today: Member in an EU COST action #CA21134 – " Towards zer0 Pesticide AGRIculture : European Network for sustainability (T0P-AGRI-Network)", member of WG2.
2022- Today: Member in a stakeholders' joint forum to deal with the common cranes situation in the Hula Valley.

Conference organization/chair:

Dec 2021 - Organized and moderated a climate change panel with Prof. Pinhas Alpert (TAU) and Prof. Nir Shaviv (HUJI); held in Zarnegin Auditorium, Tel-Hai.
2021 – Chaired a conference session at the Galilee Research Conference 2021 – "Monitoring the ecological system of Hula Agamon: hydrochemistry, vegetation, algae and cranes", Tel-Hai College.
2019-2020 – Coordinated MIGAL weekly researchers' seminar.
2016 - Co-organized BIWARD, the first Brazilian-Israeli conference on agriculture and biotechnology. http://www.negevnetwork.com/1st-biward, Natal, Brazil, November.

2012-2015 - SIDEER conference – part of the organizing committee of the international annual Swiss Institute for Dryland Environmental and Energy Research student-run symposium (www.bgu.ac.il/sideergrads).
2010, 2012 - Helped organize the 3rd and 4th International bi-annual conference on Drylands, Deserts and Desertification, Ben Gurion University, Sde Boker campus, Israel.
Lecturer at "Town-square Academia" course, Tel-Hai College

2019-2020 – Food forest, Permaculture, and Sustainability, with Dr. Liora Shaltiel Harpaz and Yuval Leibovich.

Lecturer of Permaculture Design Course (PDC 72 hours course) – External Studies department, Tel-Hai College

2020-2021 Designed, developed, and taught a Permaculture design course, with Dr. Amber Hill.

6. Participation in Scholarly Conferences

a. Active Participation

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
Apr. 2024	The Israeli Agricultural Engineering Association annual meeting	Volcani Center, Rishon LeZion, Israel	Using remote sensing to improve forest thinning recommendations	MSc. Student oral presentation
Jul. 2023	14th European Conference on Precision Agriculture (ECPA)	Bologna, Italy	Deep learning for almond fruit detection at different growth stages for orchards pest management using unmanned aerial vehicles	Oral speaker
Jan. 2023	Hula Valley Field Crops Regional Conference	Gadash Farm, Hula Valley, Israel	Using remote sensing and machine learning for the early identification of White Mold Disease in peanuts	Oral speaker
Dec. 2022	AGU fall meeting	Chicago, IL, USA	Automatic Segmentation and Counting of Roosting Common Cranes (Grus grus) Using UAV Thermal Images, Computer Vision, and Machine Learning in the Hula Valley, Israel	Oral speaker
Nov. 2022	The 8th International Conference Drylands, Deserts & Desertification	Ben-Gurion University, Sde Boker Campus, Israel	Automatic segmentation and counting of roosting common cranes (Grus grus) using UAV thermal images, computer vision, and machine learning in the Hula Valley, Israel	Poster presentation
Oct. 2022	The Israeli Agricultural Engineering Association	Faculty of Agriculture, Food and Environment, HUJI,	Improving dealing with pests in almond orchards by means of remote sensing, friendly pest control and targeted sanitation	Oral speaker

	annual meeting	Rehovot, Israel		
Mar. 2022	The 24th Conference of Galilee studies	Tel-Hai College, Israel	Monitoring the bird flu epidemic in Hula valley using remote sensing technology and image processing	Oral speaker
Dec. 2021	Hula Valley Field Crops Regional Conference	Gadash Farm, Hula Valley, Israel	Using remote sensing technology to detect biotic stress in field crops	Oral speaker
Oct. 2021	Conference of Agricultural Sciences	Wohl Conventions Center, Ramat Gan, Israel.	Early detection of soil-borne diseases in field crops via remote sensing	Oral speaker
July 2021	13th European Conference on Precision Agriculture (ECPA)	Budapest, Hungary	Early detection of soil-borne diseases in field crops via remote sensing	Oral speaker
July 2021	The 49th Annual Conference on Science and the Environment	Virtual	A digital and accurate method for estimating the number of wintering cranes in the Hula Valley using remote sensing tools	Oral speaker
Feb. 2021	The 23rd Conference of Galilee studies	Tel Hai College, Israel	Using remote sensing tools to estimate the number of wintering cranes in the Hula Valley	Chaired a session and oral speaker
Dec. 2020	Hula Valley Field Crops Regional Conference	Gadash Farm, Hula Valley, Israel	Estimating the number and influence of Cranes on agriculture in Hula Valley using remote sensing tools	Oral speaker
Dec. 2020	Hula Valley Field Crops Regional Conference	Gadash Farm, Hula Valley, Israel	Using remote sensing technology for the early detection and prevention of soil-borne diseases	Oral speaker
July 2019	12th European Conference on Precision Agriculture (ECPA)	Montpellier, France	Comparing satellite and high-resolution visible and thermal aerial imaging of field crops for precision irrigation management and plant biomass forecast	Oral speaker
Jan. 2019	Cotton research conference	Beit-Dagan, Israel	Using remote sensing tools for precision irrigation and biomass evaluation in cotton	Oral speaker
Dec. 2018	First International VENμS End-users Conference	Ben-Gurion University, Sde Boker Campus, Israel	Combining satellite imagery with high-resolution aerial scan of field crops for precision irrigation management and yield forecast	Oral speaker
Apr. 2018	The 2nd International Electronic Conference on	Virtual	Applying high-resolution visible channels aerial scan of crop canopy to precision irrigation management	Oral speaker

	Remote Sensing (ECRS 2018)			
Jun. 2016	The 44th Annual Conference on Science and the Environment	Tel-Aviv University, Tel-Aviv, Israel	Examining the sustainability and resiliency of agricultural systems in the north-western Negev under climatic changes and different irrigation distribution schemes	Oral speaker
2014	Israeli Geographical Association Conference	Haifa University, Haifa, Israel	Evaluating and predicting water consumption and spread of irrigated agricultural fields, using cellular automata and agent-based modeling	Oral speaker
Nov. 2014	The 5th International Conference Drylands, Deserts & Desertification	Ben-Gurion University, Sde Boker Campus, Israel	A Tale of Two Rivers - Pathways for improving water management in the Jordan and Colorado River Basins	Oral speaker
Mar. 2011	The Israeli Geological Society annual meeting	Mitzpe Ramon, Israel	A Comparison of Historical and Contemporary Flow Regimes of the Lower Jordan River	Oral speaker
Jul. 2010	The GLOWA Jordan River status conference	Petra, Jordan	Environmental Flow Assessment and Future Forecasting for the Lower Jordan River	Oral speaker

b. **<u>Organization of Conferences or Sessions</u>**

Date	**Name of Conference**	**Place of Conference**	**Subject of Conference/ Role at Conference/ Comments**	**Role**
Dec. 2021	Climate change and global warming	Zarnegin Auditorium, Tel Hai College, Israel	Climate change panel with Prof. Pinhas Alpert (TAU) and Prof. Nir Shaviv (HUJI)	Organizer and moderator
Feb. 2021	The 23rd Conference of Galilee studies	Tel Hai College, Israel	Session: "Monitoring the ecological system of Hula Agamon: hydrochemistry, vegetation, algae and cranes". Presentation: "Using remote sensing tools to estimate the number of wintering cranes in the Hula Valley"	Chaired a session and oral speaker
2019-2020	MIGAL researchers' seminar	MIGAL, Kiryat Shmona, Israel	Administrative and academic coordinator. Invited interesting speakers to present	Co-Coordinator
Nov. 2016	1st BIWARD Brazilian-Israeli conference on	Natal, Brazil	Semi-arid sustainable agriculture, water	Co-organizer and presenter

	agriculture and biotechnology		resources and aquaculture	
Mar. 2015	7th annual SIDEER Symposium – graduate student-run interdisciplinary conference featuring speakers from Israel and abroad	Ben-Gurion University, Sde Boker Campus, Israel	Quest for learning: delving into the multifaceted learning process	Co-organizer
Mar. 2014	6th annual SIDEER Symposium – graduate student-run interdisciplinary conference featuring speakers from Israel and abroad	Ben-Gurion University, Sde Boker Campus, Israel	Exploring real-world networks: from genes to ecosystems	Co-organizer
Mar. 2013	5th annual SIDEER Symposium – graduate student-run interdisciplinary conference featuring speakers from Israel and abroad	Ben-Gurion University, Sde Boker Campus, Israel	The emergence of design in nature: how do structures and complex patterns appear in life	Co-organizer
Nov. 2012	The 4th International Conference Drylands, Deserts & Desertification	Ben-Gurion University, Sde Boker Campus, Israel	Implementing Rio+20 for Drylands and Desertification	Part of the organizing committee
Nov. 2010	The 3rd International Conference Drylands, Deserts & Desertification	Ben-Gurion University, Sde Boker Campus, Israel	The Route to Restoration	Part of the organizing committee

7. Invited Lectures\ Colloquium Talks

Date	Place of Lecture	Name of Forum	Presentation/Comments
Nov. 2023	Virtual	Galilee International Management Institute, Israel	Precision Agriculture Powered by AI: Shaping the Future of Food Security
Jul. 2023	Ben-Gurion University, Be'er Sheva, Israel	BARD AGAI workshop - Sustainable Precision Agriculture in the Era of IoT and Artificial Intelligence	Early detection of white mold disease in field crops via remote sensing and machine learning
Jul. 2023	Bertinoro, Italy	FruitCREWS Cost Action 21142 Annual Meeting	Sat-Insight - A satellite web-based application for agricultural decision making
Jun. 2022	Galil Elion Regional Council headquarters, Israel	Preparation of Galilee regional councils for the climate crisis, kick-off meeting	Management of natural resources and agriculture in an era of climate change - challenges and opportunities in the Galilee and the Golan
May 2022	Virtual	Ministry of Science chief scientist seminar	Estimating the number of wintering cranes in the Hula Valley and the mortality of cranes from the outbreak of the bird flu epidemic using remote sensing tools

Jan. 2022	Virtual	Executive Agricultural Seminar for Board of Directors of NIRSAL, Galilee International Management Institute	Satellite-Based Systems and Geographic Information Systems use for Agriculture
Nov. 2021	Virtual	The Institute of Soil, Water and Environmental Sciences seminar, Volcani Institute, Agricultural Research Organization	Early detection of soil-borne diseases in field crops via remote sensing
Oct. 2021	Virtual	How soil science contributes to achieve the Sustainable Development Goals workshop, University of Lisbon, Portugal	Smart Farming to achieve SDGs
Jul. 2021	Neve-Yaar, Israel	Model farm in Neve Yaar - a concluding meeting of the establishment period	Differential irrigation experiment for the purpose of training machine learning algorithms to detect water stress from UAV and satellite imagery
Apr. 2021	Virtual	The Robert H. Smith Institute of Plant Sciences and Genetics in Agriculture institute seminar, Hebrew University	Early detection of soil-borne diseases in field crops via remote sensing
Feb. 2021	Virtual	Hula Valley Field Crops Regional Conference	Using remote sensing technology to detect biotic stress in field crops

8. Research Grants

a. Grants Awarded

Role in Research	Co-Researchers	Topic + published articles (# from list in section 11)	Funded by/ Amount (personal / overall)	Year
Co-PI	Iggy M. Litaor (PI), Oren Reichman	The improved rational formula model for soil loss estimation in agricultural basins: Nahal Gilboa as a case study	Ministry of Agriculture, 140,000 / 501,000 NIS	2024-2026
Co-PI	Hanan Eizenberg (PI), Onn Rabinovitz, Yaakov Goldwasser	Sustainable control of the invasive weed Trianthema portulacastrum in field crops and vegetables in the Hula Valley	JNF chief scientist grant, 120,000 / 450,000 NIS	2024-2026
Co-PI	24-participant consortium	Fostering Carbon Farming Practices through LIving LAbS in the Mediterranean and Southern EU for the healthy future of European SOILS	HORIZON-MISS-2023-SOIL-01-09, over 1.02M euros for MIGAL, 11.6M euros, funds yet to be distributed	2024-2028
PI	Mery Dafni-Yelin, Carmit Sofer-Arad, Shai Zeidi	Automatic detection by remote sensing of mango malformation disease for optimizing sanitation	Mango Growers Association,	2024

			20,000 / 40,000 NIS	
Co-PI	Aviv Asher (PI), Arie Brosh.	Artificial intelligence in pasture: improving herd and pasture management using remote sensing and real-time monitoring of herd and pasture state	Ministry of Agriculture, 150,000 / 450,000 NIS	2023-2025
Co-PI	Lior Rubinovich (PI), Dani Gamrasni	Examining the effectiveness of nets during extreme heat events to reduce fruit shedding and increasing yield and fruit quality in avocados and ascertaining the resistance of cultivars and varieties to controlled heat stroke, (#3 section 11.1)	Ministry of Agriculture, 105,000 / 600,000 NIS	2023-2025
Co-PI	Mery Dafni-Yelin (PI), Carmit Sofer-Arad	Detection of mango malformation disease using remote sensing to improve sanitation	ICA foundation, 42,000 / 84,000 NIS	2023
PI		Applied tools for conducting surveys before and after forest thinning using remote sensing technology	JNF forestry division grant, 448,800 / 448,800 NIS	2023-2025
PI	Moshe Meron, Yuval Ogni	Development of a GPS-guided sprayer that relies on mapping the shape, volume, biomass and spatial distribution of orchard trees to optimize the use of pesticides	ICA foundation, 799,000 / 799,000 NIS	2023-2025
Co-PI	Onn Rabinovitz (PI)	Examining the effect of the growth regulator Regalis on the development, yield, and quality of peanuts (Hanoch variety) in peat soil in the Hula Valley	The Council for the Production and Marketing of Peanuts, 48,000 / 150,000 NIS	2022-2024
Co-PI	Ofir Degani (PI), Onn Rabinovitz	Development of an environmentally friendly pesticide interface, based on Trichoderma fungi, against the cause of the coal rot disease, the fungus Macrophomina phaseolina, (#1, #4 sec. 11.1)	The Council for the Production and Marketing of Cotton, 35,000 / 190,000 NIS	2022-2024
PI	Miriam Silberstein, Eric Palevsky	Remote sensing for early detection of presence and damage of the spider mites Panonychus ulmi and Tetranychus urticae in Israeli apple orchards	Migal internal funding, 200,000 / 250,000 NIS	2022-2023
Co-PI	Onn Rabinovitz (PI)	Examining the effectiveness of a supplement to reduce evaporation from the soil to increase the efficiency of water utilization in growing corn for fodder in peat soil	ICL group LTD, 25,000 / 70,000 NIS	2021
Co-PI	Amos Naor (PI), Moshe Meron, Victor Alchanatis, Yafit Cohen, Iftach Klapp, Nir Sochen	Development of tools to improve the crop water stress index for irrigation scheduling	Ministry of Agriculture, 55,000 / 450,000 NIS	2020-2022

Co-PI	Ofer Shir (PI), Rafi Linker	Deep learning of a complementary ensemble of sporadic input maps, (#1 sec. 11.10)	Ministry of Science, Applied, Engineered, scientific research, 568,000 / 1,500,000 NIS	2020-2022
Co-PI	Rakefet Sharon	Improving pest control strategies (emphasis on the carob moth) by agrotechnical and friendly methods in almond orchards, (#4 sec. 11.3, #1 sec. 11.8)	Ministry of Agriculture, 160,000 / 450,000 NIS	2019-2021
PI	Motti Charter	Using remote sensing tools to determine the number and influence of cranes on agriculture in the Hula Valley, (#5 sec. 11.1, #2 sec. 11.3)	Ministry of Agriculture, 210,000 / 300,000 NIS	2019-2020
PI	Ofir Degani, Mery Dafni-Yelin, Ran Hovav	Using remote sensing tools for the early detection and prevention of soil-borne diseases in field crops, while reducing amounts of pesticides and increasing yield, (#6, #7, #8, #9, #11 sec. 11.1, #1 sec. 11.3, #2 sec. 11.8)	Ministry of Agriculture, 270,000 / 450,000 NIS	2019-2021
PI	Moshe Meron	Using remote sensing technology and image analysis for the calculation of tree volume, biomass, and spatial arrangement, for precision spraying	Migal internal funding, 72,000 / 72,000 NIS	2018
Co-PI	Michal Horovitz (PI), Rakefet Sharon, Ofer Shir	Defining the potential damage inflicted by sympatric leafhopper species (Homoptera: Cicadellidae) under different climatic zones	Migal internal funding, 20,000 / 85,000 NIS	2018
PI	Moshe Meron, Amos Naor	Precision irrigation of field crops with the aid of remote sensing technology, (#10, #13 sec. 11.1, #1 sec. 11.2, #3, #4 sec. 11.8)	Northern Agricultural R&D grant– 100,000 / 100,000 NIS	2018

b. <u>Submission of Research Proposals – Pending</u>

Role in Research	Co-Researchers	Topic	Funded by	Year
Co-PI	Iggy M. Litaor (PI), Assaf Israeli	Development of soil sampling and irrigation protocols before new planting adjusted to climate and soil edaphic characteristics	JNF forestry division grant, 120,000 / 448,800 NIS	2024-2026
Co-PI	27-participant consortium	CARBONSCAPE - Carbon Footprint and Land Use: Bridging the Gap for Climate Solutions	HORIZON-CL6-2024-CLIMATE-01-4, 217,500 / 6,000,000 Euros	2025-2027

c. <u>Submission of Research Proposals – Not Funded</u>

Role in Research	Co-Researchers	Topic	Funded by	Year	Score
Co-PI	Ofir Degani (PI), Onn Rabinovitz	Biological enrichment of cover plants, pre-growing cotton with minimum tillage, for protection against the charcoal rot disease (Macrophomina)	Ministry of Agriculture, chief scientist grant	2024	6/10
PI	Adam Abramson (PI), Nir Becker, Nader Al Khateeb, Amer Sweity	Ecosystem Service Valuation Along the Lower Jordan River Valley : An Integrated Cost-benefit Analysis Among Transboundary Stakeholders	US Aid MERC – Middle East Regional Cooperation Program	2023	The peer review panel voted (4-0) to approve this proposal for funding, however it was declined by the MERC committee
Co-PI	Lior Rubinovich (PI), Miki Noi, Nizan Senesh, Mark Perl	Mitigation of extreme cold damages in avocado using shading nets	Ministry of Agriculture	2023	
PI	Amihai Horesh, Mery Dafni-Yelin, Avital Bechar, Shay Covo, Miki Noi, Shai Zeidi	Remote and proximal sensing tools for the early detection and treatment of Mango malformation disease caused by the pathogen *Fusarium mangiferae*	Ministry of Agriculture, chief scientist grant	2023	8.47/10
Co-PI	Boris Yazmir (PI), Oren Reichman	Development of drone based autonomous system for monitoring of flora and early alert on climate related damage	Ministry of Agriculture, chief scientist grant	2023	
Co-PI	23-participant consortium	ODISEA - Onsite Data Integration for SustainablE soil mAnagement	HORIZON-MISS-2023-SOIL-01-03	2023	
Co-PI	29-participant consortium	ClimRural - Transformative Solutions for CLIMate Resilience in RURAL Regions	HORIZON-MISS-2023-CLIMA-01-01	2023	

PI	Moshe Meron, Giora Rytwo	Reducing CO_2 emissions while increasing carbon sequestration through soil efflux evaluation	JNF climate solution prize	2022	
Co-PI	Boris Yazmir (PI), Oren Reichman, Idan Barnea, Sivan Margalit, Dana Klein	Study of trendlines and development of cloud-based system and tools for research, management and backup of Hula eco-system monitoring data collected during 1994-2022	JNF chief scientist grant	2022	
PI	Eric Palevsky, Miriam Zilberstein, Ittai Herrmann,	Remote sensing for early detection of presence and damage of the spider mites *Panonychus ulmi* and *Tetranychus urticae* in Israeli apple orchards	Ministry of Agriculture, chief scientist grant	2022	
Co-PI	32-participant consortium	QUALICS - QUALity solutions for Innovative and Competitive Small and medium farms	HORIZON-CL6-2022-FARM2FORK-02-04-two-stage	2022	
PI	Coordinated a 17-participant consortium	ROSEMARY - oRganization Of Smart, Equitable cliMate sensitive water Allocation and saving schemes to incRease water use efficiencY.	HORIZON-CL6-2022-CLIMATE-01	2022	9/15
Co-PI	Iggy M. Litaor, Idan Barnea,	Examining an integrated system to increase the chance of absorption and establishment of forest trees in new plantings of a mixed forest in the JNF territories	JNF forestry division grant	2021	
Co-PI	15-participant consortium	AGRIGATE - AGRIcultural Geostaptial services through farmers demand Aggregation and Territorial Extension services -	HORIZON 2020, H2020-LC-GD-9-2-2020,	2021	
PI	Moshe Meron, Avi Gamliel, Yuval Ogni	Development of a GPS-guided sprayer that relies on mapping trees' canopy shape, volume, biomass and	Ministry of Agriculture, chief scientist grant	2020	

		spatial distribution to optimize the use of pesticides			
Co-PI	Mery Dafny Yelin (PI), Barry Tillman, Ran Hovav	The Mechanism of White Mold Resistance Trait in Peanuts	BARD – US-Israel Binational Agricultural Research and Development fund, $310,000	2019	

9. Scholarships, Awards and Prizes

10. Teaching

a. Courses Taught in Recent Years

Year	Name of Course	Type of Course Lecture/Seminar/ Workshop/High Learn Course/ Introduction Course (Mandatory)	Degree	Number of Students
2018-2019	Introduction to Remote Sensing	Lecture. (new course created especially for this purpose)	Under-graduate	~25
2020	Energy and the Environment	Lecture	Under-graduate	~30
2023-2024	Python programming for the life sciences	Lecture	Under-graduate	25-45
2024	Introduction to R Programming	Lecture	Under-graduate	20
2024	Artificial intelligence tools - introduction and uses	Lecture. (new course created especially for this purpose)	Under-graduate	11

b. Supervision of Graduate Students

Name of Student	Title of Thesis	Degree	Date of Completion / in Progress	Students' Achievements
Ellen Friedman	Applying remote sensing data to improve forest thinning recommendations	M.Sc.	In progress. Started on Mar. 2023. Co-supervised with Dr. Itai Sharon	
Hadar Gilboa	Soil Texture Mapping in a Field Using TIR Remote Sensing	M.Sc.	Nov. 2022. Co-supervised with Prof. Iggy M. Litaor	Working on a manuscript for publication in a peer-reviewed journal

Masha Meilikhov	Characterizing plant water stress using vegetation indices via spectral and thermal remote sensing imaging	M.Sc.	Jun. 2022. Co-supervised with Prof. Iggy M. Litaor	
Shajar Regev	Structural Equations modelling to evaluate the trophic state of Agmon-Hula with special emphasize on phosphorous dynamics	M.Sc.	March 2020. Co-supervised with Prof. Iggy M. Litaor	Completed with honors

11 Publications and Presentations:

1. **Articles in refereed journals (authors, title, name of journal, year, Impact factor and Rank of the journal). ONLY PUBLISHED & ACCEPTED FOR PUBLICATION.**

H-index: 10; Total citations: 299

*** Items that were published or accepted for publication after the confirmation of the last promotion**

† Co-first authorship

1. * Degani, O., **Chen, A.**, Dimant, E., Gordani, A., Malul, T., Rabinovitz, O., Integrated Management of the Cotton Charcoal Rot Disease Using Biological Agents and Chemical Pesticides. Journal of Fungi, 2024, 1–24, (Impact Factor: 4.7, Rank= Q1 plant science; # citations: 0)
2. * Alemu, M.D., Ben-zeev, S., Hellwig, T., Barak, V., Shoshani, G., **Chen, A.**, Razzon, S., Vorobyova, A., Hübner, S., Saranga, Y., Genomic dissection of productivity , lodging , and morpho- physiological traits in Eragrostis tef under contrasting water availabilities. Plants People Planet, 2024, 1–19. https://doi.org/10.1002/ppp3.10505 , (Impact Factor: 5.1, Rank= Q1 plant science; ` Horticulture; Ecology, Evolution, Behavior and Systematics; # citations: 2)
3. * Lahak, M., Alon, E., **Chen, A.**, Rubinovich, L., Covering young avocado 'Hass' trees with high-density shading nets during the winter mitigates frost damage and improves tree performance. Trees - Structure and Function, 2024, https://doi.org/10.1007/s00468-023-02485-3, (Impact Factor: 2.3, Rank= Q1 Forestry; Q2 Plant science; Physiology; # citations: 1)
4. * Degani, O., Gordani, A., Dimant, E., **Chen, A.**, Rabinovitz, O., The cotton charcoal rot causal agent, Macrophomina phaseolina, biological and chemical control. Frontiers in Plant Science, 2023, 14, 1–20. https://doi.org/10.3389/fpls.2023.1272335, (Impact Factor: 5.6, Rank= Q1 Plant science; # citations: 5)
5. * **Chen, A.**, Jacob, M., Shoshani, G., Charter, M.,. Using computer vision , image analysis and UAVs for the automatic recognition and counting of common cranes (Grus grus). Journal of Environmental Management , 2023, 328, 116948. https://doi.org/10.1016/j.jenvman.2022.116948 , (Impact Factor: 8.7, Rank= Q1 Environmental Engineering; Management, monitoring, policy and law; # citations: 24)
6. * Degani, O., Yifa, R., Gordani, A., Becher, P., **Chen, A.**, Cultivars Resistance Assay for Maize Late Wilt Disease. Biology, 2022, 1–20. (Impact Factor: 4.2, Rank= Q1 Agricultural and biological sciences; # citations: 5)

7. * Degani, O., Gordani, A., Becher, P., **Chen, A.**, Rabinovitz, O.,. Crop Rotation and Minimal Tillage Selectively Affect Maize Growth Promotion under Late Wilt Disease Stress. Journal of Fungi, 2022, 8, 1–21. (Impact Factor: 4.7, Rank= Q1 plant science; # citations: 13)
8. † Degani, O., **Chen, A.**, Dor, S., Orlov-Levin, V., Jacob, M., Shoshani, G., Rabinovitz, O., Remote evaluation of maize cultivars susceptibility to late wilt disease caused by Magnaporthiopsis maydis. Journal of Plant Pathology, 2022. https://doi.org/10.1007/s42161-022-01039-9 , (Impact Factor: 2.2, Rank= Q2 plant science; # citations: 12)
9. Degani, O., Rabinovitz, O., Becher, P., Gordani, A., **Chen, A.**, Trichoderma longibrachiatum and trichoderma asperellum confer growth promotion and protection against late wilt disease in the field. Journal of Fungi, 2021, 7. https://doi.org/10.3390/jof7060444 , (Impact Factor: 4.7, Rank= Q1 plant science; # citations: 41)
10. Meron, M., **Chen, A.**, Rabinovitz, O., Traub, E., Levine-Orlov, V., Marchaim, U., Water distribution analysis of a linear move irrigator by aerial survey and RTK-GNSS monitors. Precision Agriculture, 2021. https://doi.org/10.1007/s11119-021-09866-z , (Impact Factor: 6.2, Rank= Q1 Agricultural and biological sciences; # citations: 3)
11. Degani, O., Dor, S., **Chen, A.**, Orlov-Levin, V., Stolov-Yosef, A., Regev, D., Rabinovitz, O., Molecular tracking and remote sensing to evaluate new chemical treatments against the maize late wilt disease causal agent, magnaporthiopsis maydis. Journal of Fungi, 2020, 6, 54. https://doi.org/10.3390/jof6020054 , (Impact Factor: 4.7, Rank= Q1 plant science; # citations: 26)
12. Ben-Zeev, S., Rabinovitz, O., Orlov-Levin, V., **Chen, A.**, Graff, N., Goldwasser, Y., Saranga, Y., Less Is More: Lower Sowing Rate of Irrigated Tef (Eragrostis tef) Alters Plant Morphology and Reduces Lodging. Agronomy, 2020, 10, 570. https://doi.org/10.3390/agronomy10040570 , (Impact Factor: 3.7, Rank= Q1 Agronomy and crop science; # citations: 23)
13. **Chen, A.**, Orlov-levin, V., Meron, M., Applying high-resolution visible-channel aerial imaging of crop canopy to precision irrigation management. Agricultural Water Management, 2019, 216, 196–205.https://doi.org/10.1016/j.agwat.2019.02.017 , (Impact Factor: 6.7, Rank= Q1 Agronomy and crop science; Soil science; Water science and technology; Earth-surface processes; # citations: 58)
14. **Chen, A.**, Spatially explicit modelling of agricultural dynamics in semi-arid environments. Ecological Modelling, 2017, 363, 31–47. https://doi.org/10.1016/j.ecolmodel.2017.08.025 , (Impact Factor: 3.1, Rank= Q1 Ecology; # citations: 9)
15. **Chen, A.**, Abramson, A., Becker, N., Megdal, S.B., A tale of two rivers: Pathways for improving water management in the Jordan and Colorado River basins. Journal of Arid Environments, 2015, 112, Part, 109–123. https://doi.org/10.1016/j.jaridenv.2014.05.017 , (Impact Factor: 2.7, Rank= Q1 Ecology; Earth-surface processes; # citations: 25)

2. <u>Articles submitted</u> (authors, title, name of journal).

1. Meron, M., Peres, M., Levin-Orlov, V., Shoshani, G., Marchaim, U., **Chen, A.**, Irrigation uniformity assessment with high-resolution aerial sensors, Journal of Applied Earth Observation and Geoinformation (Corresponding author)

3. <u>Articles</u> in preparation.

1. Nagar, Y., Shoshani, G., Rabinovitz, O., Dafny-Yelin, M., **Chen, A.**, Using machine learning and remote sensing for the early detection of white mold disease in field crops
2. Charter, M., Drabkin, A., **Chen, A.**, Avian influenza outbreak control strategies: detecting and locating wild bird carcasses using artificial intelligence from imagery and by foot
3. **Chen, A.** Gilboa, H., Litaor MI., Mapping soil attributes via high resolution remotely sensed thermal imaging for precision irrigation

4. **Chen, A.**, Nagar, Y., Shoshani, G., Sharon, R., Almond fruit detection from aerial imaging for orchards pest management using deep learning

4. **Reviews in referred journals (authors, title, name of journal, year, Impact factor and Rank of the journal). ONLY PUBLISHED & ACCEPTED FOR PUBLICATION.**

5. **<u>Books</u> (authors, title, publisher, year)**

6. **<u>Edited books</u> (editors, title, publisher, year)**

7. **<u>Chapters in books</u> (authors, title, editors, publisher, year).**

1. **Chen, A.**, Weisbrod, N.. Assessment of Anthropogenic Impact on the Environmental Flows of Semi-Arid Watersheds: The Case Study of the Lower Jordan River, in: Borchardt, D., Bogardi, J., Ibisch, R. (Eds.), Integrated Water Resources Management: Concept, Research and Implementation. Springer, Heidelberg, Environmental Sciences book series, pp. 59–83, 2016. ; # citations: 18

8. **<u>Refereed papers in conference proceedings</u> (same as above)**

1. **Chen, A.,** Nagar, Y., Shoshani, G., Sharon, R., Deep learning for almond fruit detection at different growth stages for orchards pest management using unmanned aerial vehicles, in: Precision Agriculture'23. Wageningen Academic, pp. 847–854, 2023. ; # citations: 2
2. **Chen, A.,** Jacob, M., Shoshani, G., Dafny-Yelin, M., Degani, O., Rabinovitz, O., Early detection of soil-borne diseases in field crops via remote sensing, in: Precision Agriculture '21. Wageningen Academic Publishers, The Netherlands, pp. 217–224. https://doi.org/10.3920/978-90-8686-916-9_25 , 2021. ; # citations: 5
3. **Chen, A.,** Orlov-Levin, V., Elharar, O., Meron, M., Comparing satellite and high-resolution visible and thermal aerial imaging of field crops for precision irrigation management and plant biomass forecast, in: Stafford, J. V. (Ed.), Precision Agriculture '19, Proceedings of the 12th European Conference on Precision Agriculture. Wageningen, The Netherlands: Wageningen Academic Publishers, pp. 37–44, 2019. ; # citations: 9
4. **Chen, A.,** Orlov-Levin, V., Meron, M., Applying High-Resolution Visible-Channel Aerial Scan of Crop Canopy to Precision Irrigation Management. Proceedings 2, 335. https://doi.org/10.3390/ecrs-2-05148, 2018. ; # citations: 16

9. **<u>Patents</u> (authors, patent name, application type, year of application)**

10. **<u>Other articles</u> in collections or non-refereed journals (same as above). Specify language if other than English.**

1. Feder, M., Horovitz, M., **Chen, A.,** Linker, R., & Shir, O. M., Lessons Learned Report: Super-Resolution for Detection Tasks in Engineering Problem-Solving, 1–12. Retrieved from http://arxiv.org/abs/2303.00364 , 2023. ; # citations: 0

12. <u>Miscellaneous</u>

2010 – 2015 - Reporting officer for the state of Israel for the UNCCD – UN Convention to Combat Desertification, The Jacob Bluestein Institutes for Desert Research, Ben Gurion University of the Negev (BGU). Responsible for constructing the bi-annual report of the State of Israel (2010-2011, 2012-2013, 2014-2015), to the UN international convention to combat desertification, under the guidance of Prof. Uriel Safriel, and Prof. Pedro Berliner, BGU University.

13. Professional Experience

Yeroham Science Center, 2012-2014

- Supervising and guiding high school students in physics matriculation projects.
- Mentoring robotics projects for teens.

Urban Composting Pilot Manager

The Association for the Preservation of Nature and Landscape Beauties, Kiryat Shemona, 2008 – 2009

- Envisioned the project, raised the funds, and managed the pilot for urban composting in Kiryat Shemona.

Software Engineer

BMC, Israel, 2007 – 2008

- Lead Designer in the Identify department.
- Created and developed the Open API connection of AppSight's BlackBox component to various Application Servers.
- Designed code in Java in J2EE environment.

Farm Manager

She'ar Yashuv, Israel, 2007

- Handled all aspects of an organic goat dairy farm: crop monitoring and farm work, administration, cheese making, marketing, and customer service.

Software Engineer

Amdocs, Israel, 2004-2006

- Lead Designer. Created and maintained a real-time, multi-threaded, high-availability neural network monitoring system.
- Worked with C++ object-oriented environment on ACE framework.
- Helped deliver the developed product to a customer in Beijing, China (BMCC – Beijing Mobile Communication). Responsible for product customization, knowledge transfer to the local staff, and product adaptation.

Assaf Chen - Research achievements, primary activities, and research and teaching plans–June 2024

Currently, my primary field of research in MIGAL is using remote sensing technology combined with software engineering to find heterogeneity zones in agricultural fields and classify these anomalies into useful information regarding plant health and plant stress. In my research lab, we are using several sensors and cameras that are sensitive to different spectrums of electromagnetic radiation, starting from the visible light range (0.4-0.7 µm), via the red edge and near-infrared (~0.7-1.0 µm), and up to the thermal (8-13 µm) spectrum range. Our sensors have various spatial and spectral resolutions, resulting in imaging with varying pixel sizes and narrow/broad bands, according to need. We are using satellite imaging for coarser resolution imaging. By flying our cameras on-board unmanned aerial vehicles (UAVs), we achieve agility in data acquisition. We use both very-high spatial resolution visible-light sensors onboard UAVs and coarse spatial resolution via satellites to Identify variability in plants' water needs and optimize lateral move irrigation system water use in field crops for the smart use of water and to improve yields (Chen et al., 2019b, 2019a; Meron et al., 2021). We use both thermal and visible light imaging for the early detection of soil-borne diseases in field crops, aiming at reducing pesticide application and more focused treatment, preventing infestations and yield loss (Chen et al., 2021; Degani et al., 2022, 2020). We are using image processing and machine learning algorithms to detect, classify, locate precise locations, and count various targets of different sizes: almond fruits at different phenological stages (Chen et al., 2023a); common cranes (Grus grus) in their roosting grounds (Chen et al., 2023b), and classify mango flowering deformities due to biotic stress (*Fusarium mangiferae)*. In recently started projects, we are using hyper-spectral sensors to characterize the differences in the spectral signatures of healthy and stressed plants due to biotic (spider mites in apple orchards) and a-biotic (frost/heat-wave damage in avocado) stress and to estimate photosynthesis efficiency in grape vines, given different treatments (foliage fertilizer spraying). We are working on developing a spatially based algorithm for orchards' smart spraying using 3D imaging via delineation of trees' volume and spatial spread. Other recent projects involve using a Lidar sensor to map the volume/biomass and spatial distribution of trees in managed forests to improve forest thinning recommendations, and to map vegetation biomass distribution and change along the seasons for improving herd and pasture management using remote sensing and real-time monitoring of herd and pasture state.

Future research plans evolve around specializing in analyzing and classifying hyperspectral signatures of crop stress and improving deep learning skills for the identification of specific objects and classifying plant and crop damage/stress. Using deep learning and artificial intelligence for analyzing hyperspectral plant signatures. Delving into the realm of remote sensing of water bodies' pollution and nutrients. Using prior knowledge for the application of remote sensing and spatial modeling (Chen, 2017) for the characterization and rehabilitation of rivers' environmental flows, fighting climate change and obtaining adaptation measures for the sake of the natural environment and humans (Chen et al., 2015; Chen and Weisbrod, 2016). Constructing a satellite-imagery web-based application for advising farmers regarding plant health state and irrigation needs in their commercial fields.

Simultaneously, I serve as an associate faculty member in the Bio-data department at Tel-Hai College, currently teaching several computer programming courses, leveraging my

computer science background and expertise: Introduction to R programming, and Python Programming Language for the Life Sciences. Moreover, I have created two courses exclusively for Tel-Hai: Artificial Intelligence Tools - Introduction and Uses, and Introduction to Remote Sensing. As a faculty member in Tel-Hai, I plan to introduce more courses focusing on spatial modeling, precision agriculture, artificial intelligence, remote sensing of water bodies and the environment, and advanced remote sensing technology courses, to enhance the knowledge base in these important fields and to make Tel-Hai a more attractive college for potential student looking to become more proficient in combining science and technology in all fields for the world of tomorrow.

Bibliography:

Chen, A., 2017. Spatially explicit modelling of agricultural dynamics in semi-arid environments. Ecological Modelling 363, 31–47. https://doi.org/10.1016/j.ecolmodel.2017.08.025

Chen, A., Abramson, A., Becker, N., Megdal, S.B., 2015. A tale of two rivers: Pathways for improving water management in the Jordan and Colorado River basins. Journal of Arid Environments 112, Part, 109–123. https://doi.org/10.1016/j.jaridenv.2014.05.017

Chen, Assaf, Jacob, M., Shoshani, G., Charter, M., 2023b. Using computer vision , image analysis and UAVs for the automatic recognition and counting of common cranes (Grus grus). Journal of Environmental Management 328, 116948. https://doi.org/10.1016/j.jenvman.2022.116948

Chen, A., Jacob, M., Shoshani, G., Dafny-Yelin, M., Degani, O., Rabinovitz, O., 2021. Early detection of soil-borne diseases in field crops via remote sensing, in: Precision Agriculture ’21. Wageningen Academic Publishers, The Netherlands, pp. 217–224. https://doi.org/10.3920/978-90-8686-916-9_25

Chen, A, Nagar, Y., Shoshani, G., Sharon, R., 2023a. Deep learning for almond fruit detection at different growth stages for orchards pest management using unmanned aerial vehicles, in: Precision Agriculture’23. Wageningen Academic, pp. 847–854.

Chen, A., Orlov-Levin, V., Elharar, O., Meron, M., 2019a. Comparing satellite and high-resolution visible and thermal aerial imaging of field crops for precision irrigation management and plant biomass forecast, in: Stafford, J. V. (Ed.), Precision Agriculture ‘19, Proceedings of the 12th European Conference on Precision Agriculture. Wageningen, The Netherlands: Wageningen Academic Publishers, pp. 37–44.

Chen, A., Orlov-levin, V., Meron, M., 2019b. Applying high-resolution visible-channel aerial imaging of crop canopy to precision irrigation management. Agricultural Water Management 216, 196–205. https://doi.org/10.1016/j.agwat.2019.02.017

Chen, A., Weisbrod, N., 2016. Assessment of Anthropogenic Impact on the Environmental Flows of Semi-Arid Watersheds: The Case Study of the Lower Jordan River, in: Borchardt, D., Bogardi, J., Ibisch, R. (Eds.), Integrated Water Resources Management: Concept, Research and Implementation. Springer, Heidelberg, Environmental Sciences book series, pp. 59–83.

Degani, O., Chen, A., Dor, S., Orlov-Levin, V., Jacob, M., Shoshani, G., Rabinovitz, O., 2022. Remote evaluation of maize cultivars susceptibility to late wilt disease caused by Magnaporthiopsis maydis. Journal of Plant Pathology. https://doi.org/10.1007/s42161-022-01039-9

Degani, O., Dor, S., Chen, A., Orlov-Levin, V., Stolov-Yosef, A., Regev, D., Rabinovitz, O., 2020. Molecular tracking and remote sensing to evaluate new chemical treatments against the maize late wilt disease causal agent, magnaporthiopsis maydis. Journal of Fungi 6, 54. https://doi.org/10.3390/jof6020054

Meron, M., Chen, A., Rabinovitz, O., Traub, E., Levine-Orlov, V., Marchaim, U., 2021. Water distribution analysis of a linear move irrigator by aerial survey and RTK-GNSS monitors. Precision Agriculture. https://doi.org/10.1007/s11119-021-09866-z