Metadata Records
Irrigation Innovation Consortium-Supported Project Datasets

Please use a separate sheet for each dataset. Answers are automatically saved.
Questions? Contact Diane DeJong: diane.de_jong@colostate.edu.

Thank you!

Question	Answer
Project name	Optimizing irrigation of turfgrass using soil sensors, IoT Lora technology, and artificial intelligence
Project background	"Smart" irrigation controllers have become more prevalent in landscape irrigation, but still represent a small fraction of the systems installed across the U.S. While a step in the right direction, most "smart" controllers suffer from two fundamental weaknesses: 1) they don't use on-site soil moisture sensors to adjust water balance algorithms or enhance the irrigation decision process, and 2) they don't use machine learning (A.I.) to improve and automate irrigation scheduling over time. This proposal will leverage new developments in sensors, machine learning, and data analytics to addresses these weaknesses. Our work will advance our fundamental understanding of how these technologies can be integrated into landscape controllers so that operation becomes like a driverless car – the owner gives directions on where they want to go (want to achieve), and the A.I.-based system takes it from there. We envision a future where most residential controllers are operated as a service, in which the owner never touches the controller. Findings can be used by a host of industries that want to incorporate soil moisture sensing and A.I. into their irrigation controller technology.
Dataset name	
Primary author Include first & last name, institution affiliation, and email address.	Jay Ham, Colorado State University, Jay.Ham@colostate.edu
Primary contact The primary contact may be the same or different from the primary author. Include first & last name, institution affiliation, and email address.	Jay Ham, Colorado State University, Jay.Ham@colostate.edu
Dataset description Please provide a brief, clear summary description of the dataset contents. Indicate as applicable: purpose and scope; time period; areas of investigation; and any other special characteristics.	Data types: Soil moisture content, soil bulk apparent electrical conductivity, soil texture, soil salinity, irrigation scheduling, applied water amounts. Project locations: 3 golf courses, and 2 agricultural fields located in Fort Collins, CO.
Spatial coverage Please be specific as possible about the geographic coverage of your data, and record the information according to defined standards, such as FGDC or the Getty Thesaurus of Geographic Names. You can enter lat/long data, county names, state names, etc.	Larimer County

Temporal coverage Describe the temporal coverage of your dataset: Start: Time of day, Date, Month, Year Finish: Time of day, Date, Month Year	2019-2020
Re-use limitations Describe known problems or caveats that would limit reuse of the data (e.g., uncertainty, sampling problems, blanks, quality control samples) and/or that future potential users of your dataset should know about. Or indicate "None."	Data were collected over a very limited range of use cases, mainly turfgrass on golf course fairways. Data were collected over a limited time - a few summer months.
Citations Please include full citations and DOIs for articles published based on or related to this dataset. Or indicate "None."	None
Keywords Please add a few appropriate National Agricultural Library keywords: https://agclass.nal.usda.gov/vocabularies/nalt	turfgrasses; artificial intelligence; landscape management
Tags Please add a few of your own user-defined tags that would be useful to others who might use your dataset in the future.	turfgrass irrigation
Acronyms & abbreviations Please define any acronyms, site abbreviations, or other project specific designations used in your dataset. Or indicate "none."	IOT - internet of things
Other dataset storage location Has this dataset already been uploaded elsewhere? Yes or No Reasons may include a requirement as part of publishing a paper or storing data on GitHub or other locations to make accessible to others. If yes, please provide the link or other information to explain where the dataset is located and where or how it can be accessed.	No