



Automated Evaluation with Structured Outputs

Dataset

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Evaluate

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title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
Dynamic Response of a Human Neck Replica to Axial-Compression Impact Loading	Energy: Physical	2014	set()	Purpose: A human neck replica was made to simulate dynamic response to axial loading, H1. Dynamic loading of neck replica can simulate realistic axial-compression injury to the cervical spine. H2. Severity of measured neck force depends upon impact load and velocity. H3. Neck flexion-extension position affects measured neck force. H4. Simulated neck musculature affects neck stability. Procedure: Flexible life-sized neck replica was	United States of America	MN		['nan']	0	4

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
					constructed with plastic vertebrae and intervertebral discs, surrogate head, and 5 neck muscle groups were simulated with cables and static weights. Drop tower impactor instrumented with force transducer applied consistent axial loads. Force plate at base of the spine measured response at 5000 sample/sec. Motion analysis of spine segments performed with reflective markers, high-speed camera at 600 fps, and image analysis software. Sensor output amplified, and converted to force (Newtons) using data acquisition system. Neck tested in 5 positions, 2 impact loads, 2 velocities, with low and high tension neck muscles, with minimum of 3 trials per condition. Force, impulse, impulse time, and loading rate in various conditions compared with ANOVA with repeated measures, $P<0.05$. Data/Conclusions: Neck model replicated						

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					dynamic response of the neck to axial loading. Higher impact magnitude and velocity resulted in higher measured force at the base of the spine. Impact force was much higher in head-down or spear-tackling position. Impact caused extension in middle cervical spine (C2-5) and flexion in upper (C0-2) and lower (C5-7). High tension muscles resulted in higher loading rate, shorter impulse time, lower impulse, higher force, and less intersegmental motion.						
	The Effect of Nutrient Solution Concentration on Hydroponic Spinach Plants	Physics and Astronomy	2014	set()	Studies comparing the mineral nutrition of hydroponically and conventionally grown vegetables have been inconclusive, an advantage of hydroponically grown vegetables is that mineral nutrient concentrations supplied to the plants can be directly controlled. Based on this information an experiment was designed to investigate whether the mineral nutrient content of spinach (<i>Spinacia</i>	United States of America	UT		['nan']	2	3

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
					<p>oleracea) could be increased by increasing the concentration of hydroponic nutrient solutions. Spinach was grown hydroponically using a commercially available nutrient source at 1.0, 2.6, 4.2, and 5.8 times the recommended concentration. Temperature and pH were monitored throughout the growing period. Plants were harvested at maturity. Plant length and mass were measured prior to analysis. Elemental analyses of the nutrient solutions and spinach leaves were performed by ICP-OES and ICP-MS. Speciation of the nutrient solutions was modelled using Visual Minteq. Plant biomass increased with increasing nutrient solution concentration. Free ion activities also increased with increasing nutrient solution concentrations. However, increasing the nutrient solution concentrations did not result in an increase the mineral nutrient concentration in the spinach</p>						

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
					leaves. The highest spinach leaf concentrations of all nine mineral nutrients investigated occurred in the lowest concentration of nutrient solution. The results illustrate the complex nutrient uptake dynamics of spinach, and that increasing the nutrient content of spinach may not be achieved by simply increasing the nutrient concentration of the growth medium.						
	Do Air Root Pruning Pots Accelerate Success in a No-Till Garden?	Physics and Astronomy	2014	set()	The purpose of my project was to determine which eco-friendly growing system would produce the best vegetable transplants for a no-till garden. I chose recyclable air root pruning pots and biodegradable peat pots because these growing systems address consumer demand for product-stewardship or environmentally-conscious products. The study evaluated the subsequent growth of three vegetable species Solanum lycopersicum, Capsicum annuum, and	United States of America	LA		['nan']	1	2

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
					<p>Solanum melongena in a no-till garden after being propagated in specialized containers which allow for air root pruning compared with biodegradable peat pot production which does not. Results show that both growing systems produced healthy transplants. Peat pots produced plants with greater height growth and greater shoot fresh weights and dry weights. Air root pruning pots produced plants with greater root fresh weights and dry weights. Once the plants were transplanted in the garden, height growth was about the same for S. lycopersicum and C. annuum. Height growth was greater in S. melongena grown in air root pruning pots. Air root pruning growing systems cost about 5 times more than peat pot growing systems, so the use of air root pruning technology for vegetable transplant production may not be cost effective based on these results. If I were to do a</p>						

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
					continuation of this project, I would expand my project to include fruit production results.						
	Insect-repelling Plants & New Organic Pesticide	Environmental Engineering	2014	set()	Organochlorine pesticides in agriculture are not only powerful but also pollute the soil and destroy the ecosystem. As a result, scientists are currently looking for organic pesticides that can repel pests without causing environment pollution and risk to human body. Some plants have a high potential of repelling pests and have evolved to defend themselves from pests. If different organic pesticides were combined, then it would be a better pesticide because of the synergistic effect between these components. Individual plant extracts from pyrethrum, tobacco, garlic, and red pepper were tested on how fast it killed the crickets. The median lethal dose (LD50) which indicated the potency of the organic pesticides for pyrethrum, tobacco, red pepper and garlic was 0.42, 4.93, 20, and 50 respectively.	United States of America	TX		['nan']	1	2

title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
				<p>Pyrethrum had the highest potency followed by tobacco, red pepper, and garlic. The sum of the individual death rate of crickets in tobacco which was 3 and pyrethrum which was 36 was less than the death rate of 84 caused by the combination of tobacco and pyrethrum. This indicated a synergistic effect between tobacco and pyrethrum. Synergistic effect was also seen between red pepper and pyrethrum. Because of its low LD50 and high synergistic effect with other plant extracts, agriculture with pyrethrum pesticides would be eco-friendly and economical. Organic pesticide research is significant to prevent environmental pollution and decrease the effect of bioaccumulative chemicals on humans and other living things. This project will help scientists find better combinations of organic pesticides for practical use in agriculture.</p>						

	title	category	year	schools	abstract	country	State	Province	awards	Originality	ScientificRigor
	How Do Different Factors Affect the Accuracy of Neural Networks in the Binary Decision Making of Cancer Detection?	Earth and Environmental Sciences	2014	set()	<p>The purpose of this experiment is to determine how different factors affect the accuracy of artificial neural network, specifically for cancer detection. Every factor tested did lead to a change in the accuracy of the network. The factors tested were the rate of learning, use of momentum, and the overall structure of the network. This experiment was performed using a self-written computer program and a data set of the laser fluorescence of colon polyp scans. The test produced two measurements of accuracy but only one is really used for my conclusions. While there was some unpredictability in the data, there were consistent patterns that I based my conclusions upon. I conclude and my data suggests that a specific learning rate in each type of structure where the accuracy was maximized, as I hypothesized. Unlike my prediction the value was fairly high (above .75). It also appears</p>	United States of America	MN		['nan']	2	0

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				that this specific rate is inversely proportional to size of the network. While I hypothesized that the momentum that has highest accuracy will be proportional to the rate of learning. Having multiple hidden layers in the network decreased the accuracy, instead of increasing it like I predicted. The contributions of this project are an increased understanding of how to build a more accurate artificial neural network and the ability to better predict cancer based on the laser fluoresces of colon polyp scans.						