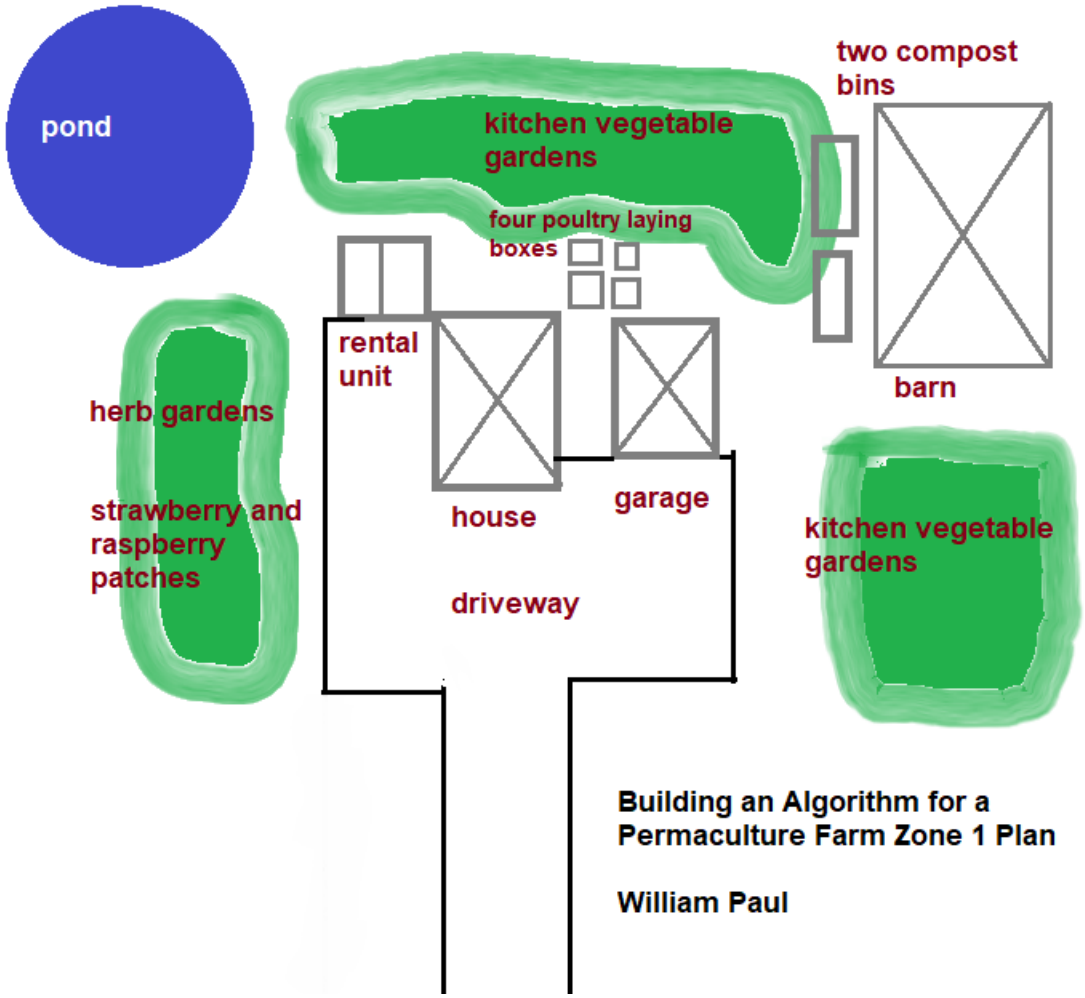

"Building an Algorithm for a Permaculture Farm Zone 1 Plan - includes AI Ethical Guidelines"

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(Section A)

A succinct definition of Permaculture is to "design with Nature." Herein an algorithm comes from human experience, through Nature and results in a plan. We focus on Zone 1 to simplify the data set and process.

A Permaculture site is divided into zones. Zones consider the human energy use and flow within a system in order to reduce unnecessary travel time. The Five Zones are: Zone 1 - House; Zone 2 - Home Orchard; Zone 3 - Farm; Zone 4 - Semi-Managed; Zone 5 - Wild.

Zone analysis is about understanding the patterns of human movement within a Zone in order to place design elements where they are naturally and easily given the attention they require. Movements are analyzed like what pathways you typically follow, where in your yard you find yourself hanging out, and how often you use a particular area.

Zone 1 is "home" or the area with the most daily use. Elements that are placed in Zone 1 require the most attention, observation, and frequent upkeep. By placing high maintenance plants and/or structures next to areas that you pass every day, you are more likely to give them the attention they need with little to no extra effort.

The AI Data Set for Zone 1 includes: house, rental unit, barn, garage, driveway, herb gardens, kitchen vegetable gardens, strawberry, and raspberry patches, four poultry laying boxes, a pond, topography, and two compost bins.

https://open.oregonstate.education/permaculture/chapter/zones/

(Section B)

Building the Algorithm for Zone 1: In permaculture, an algorithm is typically used to design a habitation or to perform a computation. The following nine points represent how a hypothetical algorithm is constructed:

1. Know the algorithm's goal - to design an integrated Zone 1 plan for a permaculture farm

2. Collect relevant data - see Section A.

3. Preprocess the data to make sure it's accurate. The techniques involve removing duplicates and correcting errors, like missing components, which can skew your results and reduce the accuracy of the algorithm.

4. Select the algorithm type - Classification: Sort the Zone 1 data into predefined classes, including: (a) buildings, (b) vegetables and (c) compost bins.

5. Design the algorithm structure - Use flowcharts to represent the steps of the algorithm, using symbols like arrows and boxes to show the flow of classifications. These tools help you understand the sequence of steps and decision points.

6. Implement the algorithm - the Zone 1 plan that will execute the steps you have designed. Here, your algorithm is transformed from a theoretical plan into a functional tool that can process data and design Zone 1.

7. Test the algorithm - divide data into several subsets (plants and structures) and test (cross-validation).

8. Fine-tune the algorithm - adjust the various permaculture parameters and evaluate how the model can achieve the best possible outcomes.

9. Deploy and monitor the algorithm - deploy the algorithm in a production environment, whether that's a dashboard, a plan, or a scheduled report. Monitor its output and watch for any changes or anomalies that may need further adjustments. Review the algorithm's accuracy, precision, and other key metrics to keep it relevant to your Permaculture Zone 1 goals.

https://www.klipfolio.com/

Ultimately, the final product should help drive productivity, uncover insights, and give your farm an edge on traditional designs. One can now begin to decipher a pattern of how humans interact with the design space.

(Section C)

The goal of this algorithm is to produce a site plan with a set of prescribed data for Permaculture Zone 1 (see graphic). In this version, the algorithm includes the listed data set with the exception of doubling the kitchen vegetable gardens. Thus Zone 1 serves as a base map for permaculture farm design. Note that the topography is considered flat (zero slope) at Zone 1.

(Section D)

Ethical AI Guidelines for Permaculture include:

Use AI as a tool

AI should support human creativity and effort, not replace the critical processes of observation, analysis, and design.

Transparency

Clearly disclose when and where AI was used in the project, whether for generating ideas, visualizations, or text. It’s like the image caption / image source rule.

Limit environmental impact

Use energy-efficient or eco-conscious AI platforms, and use AI sparingly to minimize energy consumption.

Ensure accessibility

Prefer open-source AI tools to avoid exclusion of students and the public.

Equality

We need to make sure that people know it is OK to use AI – and that there are guidelines for them.

Foster Learning and critical thinking

Encourage students to critically evaluate AI suggestions and understand the reasoning behind decisions, rather than accepting outputs at face value. AI is often hallucinating.

Respect privacy and data

Avoid using AI tools that require uploading sensitive or personal information without ensuring it will be handled securely.

Support the Permaculture Ethics

Align AI usage with permaculture principles, emphasizing ecological integrity, social equity, and resource sharing.

Avoid over-reliance

Balance AI use with hands-on, local, and experiential learning to maintain authenticity in permaculture designs.

Reflection

If AI has been used in a design it needs to be clear for the tutor where and when (transparency) it was used but we also need people to reflect on the usage – like we would require for any other tool.

https://www.beyondbuckthorns.com/content/diploma-applied-permaculture-design/thoughts-about-artificial-intelligence-permaculture

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