The five required components for a basic aquaponic system infamous fish tank the fish tank

1. the fish tank - this is the place where the fish dwell (aquariums or round tanks -fiberglass tanks or polyethylene tanks)- we can increase our stocking density and start putting more fish.
2. the solids filter - once you're feeding your fish , they're going to be producing all types of solid waste and what we need to do is we need to capture that solid waste and get it out of the system because if not it's going to cause problems especially in higher density systems filter (the drum filter, radial flow filter, swirl filter , bead filters , media bed filters)
3. biological filtration- you're gonna have bacteria that are going to be involved in the biological filtration . This is from the accumulation of ammonia when you're feeding your fish. The fish are gonna excrete ammonia primarily through the gills and that ammonia is gonna accumulate in the system. Also through microbial processes they're gonna produce ammonia as well and we have to do something with that so there's bacteria that developed when we put together a biological filter. There's bacteria nitrosomonas and nitrobacter they come through and they convert the ammonia into nitrite and then it gets converted into nitrate which is a usable form of nitrogen for the plants so what you can use here for your bio filter (trickle filters use the bead filter, media bed , B filter
4. hydroponic sub unit - this is where we're going to be raising our vegetables (Dutch buckets nitrifying bacteria are converting your ammonia to the nitrite and then to nitrate. The nitrate is then used by the plants . Nitrate is one of the nutrients required of the 116 nutrients required for plant development.
5. the sump tank (reservoir) -this is where we're storing water and replenishing water . We add our base here in order to raise the pH because in the aquaponic system due to the biological activity, the nitrification process the pH begins to drop . When the pH begins to drop , we need to add base here, in order to bring pH up to a point where it's suitable for the fish and the plants.
6. water pump - distribute the nutrients to these various components.

One option could be : We monitor the pH for a predictive horizon= ?? using LSTM and generate the alert

Other option could be : We monitor the pH for a predictive horizon= ?? using linear regression and generate the alert