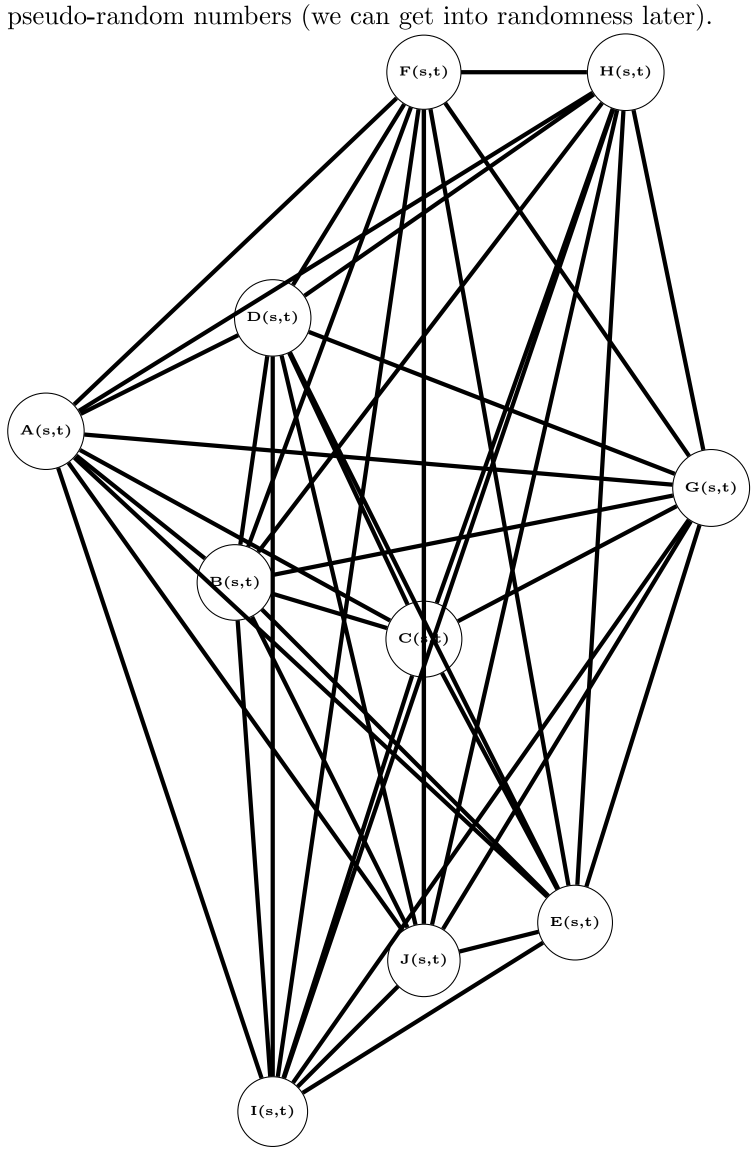
General Physics Notes (08102026):

I would like to cover the connected diagrams of the neural network in an arbitrary sense or an abstract sense. This generalization requires two things really:

1. A description of points or a set of points in a field or arbitrary dimension.
2. Pythagorean distances relating the positions of the coordinates in spacetime to a relative origin.

We should start with the diagram. I have included one that was generated with pseudo-random numbers (we can get into randomness later).



This description of points is correlated to any arbitrary set of nodes in spacetime (s,t) in one frame. There is a set of origins of course and a set of test and moving frames as well. This nearly infinite set needs analytic continuation to describe its function.

$$P(s,t) = \sum_{A_i} ({x_i}_s^2 + {y_i}_s^2 + {z_i}_s^2 + c^2 t_i^2)^{\frac{1}{2}} \tag{1}$$

We are seeing one frame's spacetime coordinate.

$$P_N(s,t) = (A(s,t), B(s,t), C(s,t)...N(s,t)) \tag{2}$$

We have to generate a set of points, which is nice to show that all are quadratic or Pythagorean in nature.

$$\int_{\infty}^{\infty} P_N(s,t) e^{-i2\pi st} \partial s = \tilde{P}_N(s,t) \tag{3}$$

We have a good Fourier transform of the coordinates.

$$\int_{\infty}^{\infty} \sum_{A_i} ({x_i}_s^2 + {y_i}_s^2 + {z_i}_s^2 + c^2 t_i^2)^{\frac{1}{2}} e^{-i2\pi st} \partial s = \tilde{P}(s,t) \tag{4}$$

Techniques we can use to find these functions are Taylor expansion, small angle approximation, linearization, and integral tricks. I think we'll generate a solution.

$$\int_{\infty}^{\infty} P_N(s,t) e^{-i2\pi st} \partial s = \zeta(s,t) \sum_{n=0}^{\infty} \frac{s^2}{n!} \tag{5}$$

This might give us a bound on the primes in the zeta and the structure of the Fourier components of the connected diagram. It is useful in frequency analysis of neural nets.