Fractional Brownian Motion
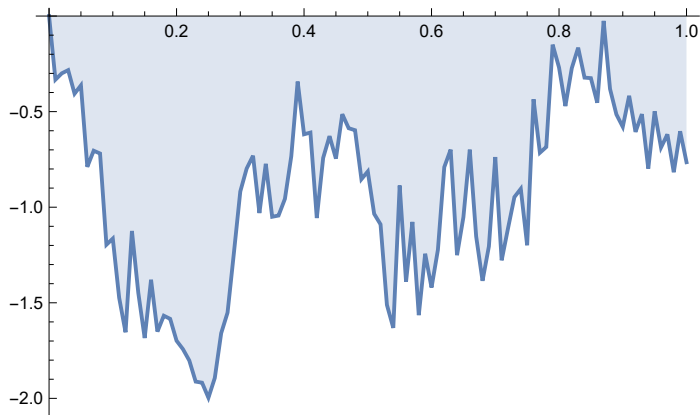
https://twitter.com/nntaleb/status/891346755996004353/photo/1

In[•]:= **data = RandomFunction[FractionalBrownianMotionProcess[0.3], {0, 1, 0.01}]**

Out[•]=

TemporalData[⊞ 〜 Time: **0** to **1**
Data points: **101**   Paths: **1**]

In[•]:= **ListLinePlot[data, Filling → Axis]**

Out[•]=

In[•]:= **Mean[FractionalBrownianMotionProcess[μ, σ, h][t]]**

Out[•]=

$t\,\mu$

In[•]:= **Variance[FractionalBrownianMotionProcess[μ, σ, h][t]]**

Out[•]=

$t^{2h}\,\sigma^2$

In[•]:= **CovarianceFunction[FractionalBrownianMotionProcess[μ, σ, h], s, t]**

Out[•]=

$\dfrac{1}{2}\,\sigma^2\left(s^{2h}+t^{2h}-\text{Abs}[-s+t]^{2h}\right)$

In[ ]:= **Plot3D[CovarianceFunction[FractionalBrownianMotionProcess[1 / 3], s, t],**
{s, 0, 5}, {t, 0, 5}, ColorFunction → "Rainbow"]

Out[ ]=