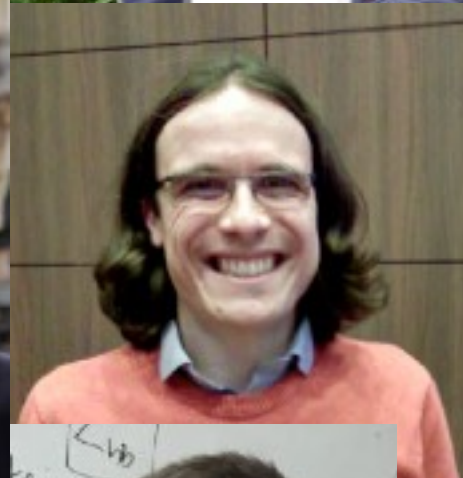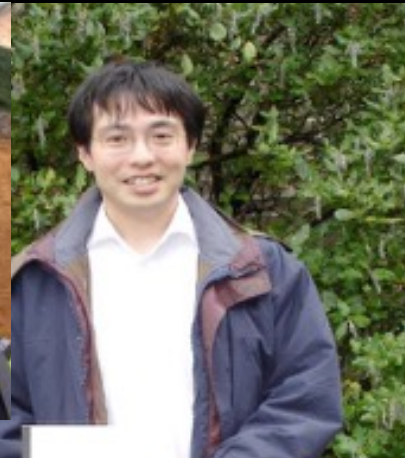# Graded Comonads

**Supports the following data-usage constraints:**

- **Linear usage (one)**
- **Affine usage (one or none)**
- **Non-linear usage (tons)**
- **None to tons**
- **Privacy**
- **Time complexity**
- **Session typing**

# Graded Comonads

$$\frac{\Gamma_1, \Gamma_2 \vdash B}{\Gamma_1, \square_0 A, \Gamma_2 \vdash B} \; W$$

$$\frac{\Gamma_1, \square_{r_1} A, \square_{r_2} A, \Gamma_2 \vdash B}{\Gamma_1, \square_{r_1 + r_2} A, \Gamma_2 \vdash B} \; C$$

$$\frac{\Gamma, A \vdash B}{\Gamma, \square_1 A \vdash B} \; D$$