

Gaussian Graphical Models

Let $\mathcal{G} := (V, E)$ be a graph consisting of

- ▶ vertices $V := v_1, \dots, v_n$, and
- ▶ edges $E := e_1, \dots, e_k$.

We can also represent G as an adjacency matrix $\mathcal{A} := (a_{ij})_{i,j=1}^n$.

In a **Gaussian Graphical Model** (GGM), each node v_i is then associated with a random variable x_i , and the assumption is made that

$$X := (x_1, \dots, x_n)' \sim \mathcal{N}(\mu, \Sigma),$$

where, for $i \neq j$, $\mathcal{A}_{ij} = 0 \implies (\Sigma)_{ij} = 0$.