**Simple k-path in Graph**

**Nader Bshouty, Abasi Hasan**

---

**What is our goal?**

- To find “Good” exponential running time algorithm in parameter $k$.

- By improving the base of the exponent.

$k^k \rightarrow 16.1^k \rightarrow 12.6^k \rightarrow \cdots \rightarrow 2^k \rightarrow 1.65^k$

---

**Simple k-path problem is NPC**

*Simple k-path problem:* Given a graph $G$ on $N$ vertices, the $k$-path problem asks whether $G$ contains a simple path on $k$ vertices.

---

**Our Results**

*NEW simple TECHNIQUE*

---

**Previous Result**

- **Random Algorithm** $O^*(1.65)^k$

- **Deterministic Algorithm** $O^*(4)^k$

---

**What’s next?**

- This is Future

- r-Simple k-path

---

**Computer Science Department Technion- Israel Institute of Technology**