User Manual

NECTAR (Nash Equilibrium CompuTation Algorithms and Resources), is a software environment for computing Nash and other equilibrium points. NECTAR is designed to serve the computational needs of the game theory researchers and practitioners who apply game theory and mechanism design to solve their design problems. NECTAR supported Nash and other equilibrium points for normal and extensive form games. Following is the hierarchy of functionality that can be computed that can be computed by NECTAR.

1.NORMAL FORM GAME :-
- **1.1 CORRELATED EQULIBRIUM**
- **1.2 LEMKE- HOWSON**
- **1.3 MANGASARIAN ALGORITHM**
- **1.4 MIXED INTEGER PROGRAMMING**
- **1.5 PURE NASH EQULIBRIUM**
- **1.6 SIMPLE SEARCH METHOD**
- **1.7 TWO PERSON ZERO-SUM GAME**

2. EXTENSIVE FORM GAME
- **2.1 EXTENSIVE TO NORMAL FORM**
- **2.2 SEQUENCE FORM ALGORITHM**

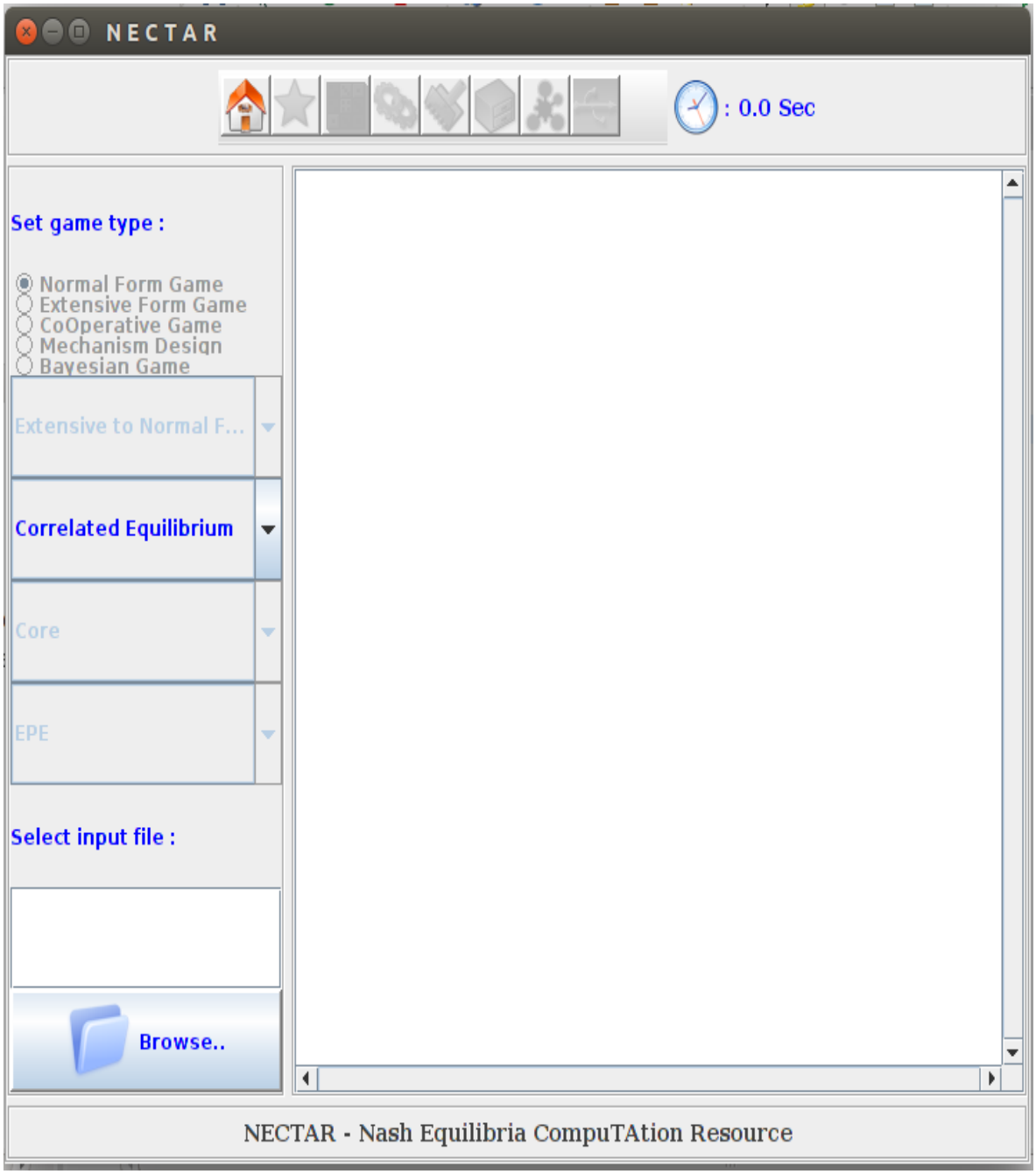
3. COOPERATIVE GAME
- **3.1 CORE**
- **3.2 SHAPLEY VALUE**
- **3.3 APPROXIMATE SHAPLEY VALUE USING NUCLEOLUS**

4. MECHANISM DESIGN
- **4.1 EPE**
- **4.2 DICTATORIAL**
- **4.3 DSIC**
- **4.4 BIC**
- **4.5 EX-POST IR**
- **4.6 IIR**
- **4.7 EX-ANTE IR**

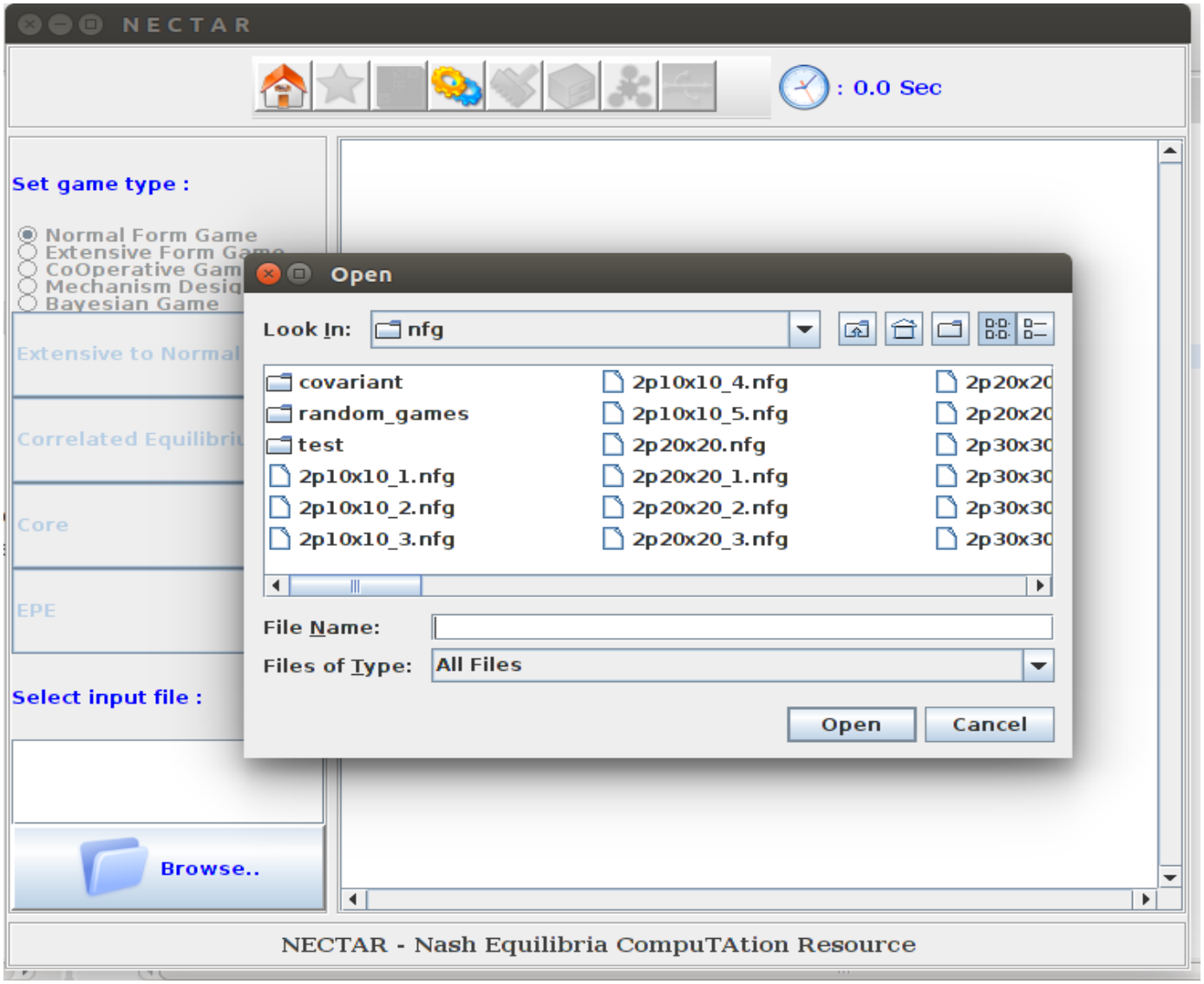
5. BAYESIAN GAME

Once you run the jar file java applet will be open after which follow the following steps :-

1. Select the game type by clicking on one of the radio button like Normal Form Game is selected in the below figure . Once you select the radio button of the Game Type , the suboption in the form of drop down corresponding to the game type will be enabled below like Correlated Equilibrium is enabled in blue colour in the figure.



2. Click on Browse button to upload the file in GAMBIT format. Note that you need to load appropriate GAMBIT file corresponding to the Game Type that you selected. For example, in Normal Form Game the file with extension .nfg should be uploaded, for Extensive Form Game .efg extension file should be uploaded.


NECTAR
: 0.0 Sec
Set game type :
Normal Form Game
Extensive Form Game
CoOperative Gam
Mechanism Desig
Bayesian Game
Extensive to Normal
Correlated Equilibriu
Core
EPE
Select input file :
Browse..
Open
Look In:
nfg
covariant
random_games
test
2p10x10_1.nfg
2p10x10_2.nfg
2p10x10_3.nfg
2p10x10_4.nfg
2p10x10_5.nfg
2p20x20.nfg
2p20x20_1.nfg
2p20x20_2.nfg
2p20x20_3.nfg
2p20x20
2p20x20
2p30x30
2p30x30
2p30x30
2p30x30
File Name:
Files of Type:
All Files
Open
Cancel
NECTAR - Nash Equilibria CompuTAtion Resource

3. Once you select the file and select “open” option, click the yellow colour star button which will perform the computation and display the desired result.